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THE EFFECT OF VARIETY, LOCATION AND YEAR ON FIBRE CONTENT OF SOILSEED FLAX STRAW

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The Effect of Variety, Location and Year on Fiber Content of Oilseed Flax Straw

Final Report

Biolin Research Inc.

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Project Title: The Effect of Variety, Location and Year on Fiber Content of Oilseed Flax Straw

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The Effect of Variety, Location and Year on Fiber Content of Oilseed Flax Straw

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Executive Summary

Background

Recent market surveys and on-going research indicate that there are many potential products that could utilize flax fibers to complement or replace glass, synthetic and cotton fibers. However, processing flax straw into industrial-grade fiber is not profitable if the fiber content of the straw is below a critical value. Biolin Research has developed a Near InfraRed (NIR) protocol to estimate the fiber content in unretted flax stems. This system was used to determine the fiber content of flax straw samples collected from research plots across Saskatchewan in 2003 to 2005.

Objectives

The objectives of this study were to:

LONG TERM - Give producers, processors, breeders and potential investors the information necessary to create profitable flax fiber based industries in Saskatchewan

SHORT TERM - Determine how a processor's fiber yields can be affected by location, variety, and weather.

Experimental Methods

Over 1,596 straw samples were collected from widely separated SAC research plot locations, and 619 straw samples from three genetic progress trials at AAFC research farm sites. At each variety test location, a selection of 11 to 17 varieties, depending on trial year, in SAC trials, and 25 in Genetic Progress trials was replicated three times in randomized plots. Due to dry conditions that year flax straw at some plots was short or sparse, thus, straw was not gathered at these plots. During seed harvest of the plots, the cutting bar of the plot harvester was raised such that it cut just below the seed bolls. This was done to maximize the length of straw left standing to obtain an indication of the maximum yield of straw that could be obtained if flax was "straight cut" instead of being swathed. Straw from each plot in each trial was pulled out of the ground by hand after the seed was harvested. When possible, the samples were weighed to estimate the amount of straw that could likely be salvaged on an equivalent per hectare basis. From each straw sample collected, a sub-sample bundle of straw 4.0-cm in diameter was selected. Each sub-sample bundle was cut into 19-cm lengths 10.0 cm above the ground level mark. After cutting, each sub-sample was weighed and then analyzed for bast fiber content by NIR technology. Fiber yields, on a per hectare basis, were calculated by multiplying the bast fiber content generated by the NIR system, by the estimated amount of salvageable straw per hectare.

Selected samples were manually retted and decorticated by Biolin technicians to compare these NIR results with manual method results.

The data generated was compiled into tables and analyzed using regression analysis. Highlights and summaries of this analysis are presented in the following sections. The raw data from the 2003 to 2005 SAC trials is in Appendix A. The original regression equations for the data from the 2003 to 2005 SAC trials are in Appendix B. The raw data from the 2003 to 2005 Genetic Progress trials are in Appendix C. The original regression equations for the 2003 to 2005 Genetic Progress trials are in Appendix D. Appendices A, B, C, and D are available upon request.

Results and Discussion

To determine the consistency of fiber content of specific varieties given different growing season conditions, further years of testing will be necessary. Both the NIR and manual method of bast fiber used determination are suitable to distinguish straw with high medium or low bast fiber contents.

Sources and Usefulness of Oilseed Flax Straw Samples in 2003

It was initially expected that oilseed flax straw would be available from regional variety trials at 13 sites in Saskatchewan. However, some plots received so little rain that either the trials were destroyed before seed harvest or there was no straw to salvage after the seed was harvested. The extremely dry conditions at many sites in Saskatchewan meant that the results did not indicate the fiber contents or yields to be expected in more normal years. We do not know how much bias and misleading information was generated by the dry conditions.

Sources and Usefulness of Oilseed Flax Straw Samples in 2004

Many of the Saskatchewan locations experienced a cool summer, hail and/or frost damage in August and an unusually late fall in 2004 and, hence, seed yield was much lower than normal. Due to the inability to collect from all regional variety trials in 2003, Agricore United allowed Biolin Research staff to collect straw samples from some of their Solin variety trials. It was decided by some of the trial managers not to harvest the seed from the poorer performing sites that had a c.v. of over 15%. There were statistically significant differences in bast fiber content and fiber yield among most of the locations and often between varieties at the same location. Results indicated that some varieties with superior fiber content and seed yield in 2003 were inferior in 2004.

Sources and Usefulness of Oilseed Flax Straw Samples in 2005

Many of the Saskatchewan locations experienced an over abundance of rain but plant stands were sufficient for straw production, There were statistically significant differences in bast fiber content and fiber yield among most of the locations and often between varieties at the same location. Results indicated that some varieties with superior fiber content and seed yield in 2005 were inferior in 2003 and 2004.

Conclusions and Impact

Potential investors into processing operations have new information that will help with site selection and straw collection. Fiber contents, straw yields and fiber yields tend to be higher in cool wet years versus dry hot years. We do not know how much bias and misleading information was generated by the unusual growing season conditions in Saskatchewan in 2003 and 2004 but there were significant differences between fields. Varieties and locations do often influence fiber content, hence farmers can influence fiber content by choosing particular varieties. More years of data are needed to improve our ability to predict which varieties will generally be superior in a specific area.

Impact

The reader should keep in mind that fiber yield is related to both fiber content of the plants and the total yield of straw. High fiber content in a year when low biomass is produced may not produce enough fiber per acre to make collection profitable for processors.

It is obviously very important for processors of flax straw to be able to choose only straw that will be profitable for them to collect (i.e., have high enough fiber content and yield). The results of the tests carried out in this project indicate that variety and location of production often influence fiber content. Farmers, thus, can influence fiber content by their choice of variety, based on the location of production. Biolin's manual and NIR methods of testing flax samples for fiber content provide a basic, essential testing and assessment tool for producers, processors and potential investors who seek to develop a fiber industry in Saskatchewan.

Further testing for fiber content of oilseed flax varieties grown in various locations in the province and ongoing research work to identify and assess the factors that contribute to fiber content are necessary if the private sector and governments wish to increase the number and size of firms engaged in value adding activities based on flax straw and flax fiber.

Assuming weather plays an important role in determining fiber content and, that a particular location that produces high fiber content straw in one year will not necessarily produce high fiber content straw the next year; processors will likely find it necessary to collect straw from widely separated and different locations in different years and/or to store high fiber content straw over several seasons to meet their needs.

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Abstract

Near InfraRed (NIR) and manual processing methods were used to measure the bast fiber content of Saskatchewan Regional Variety and Agricore United Solin Variey trials with 30 flax varieties grown in various combinations at 21 sites over 3 years, and Genetic Progress trials with 25 varieties and 4 locations in Saskatchewan from 2003 to 2005. Results showed that location, variety and/or soil zone can have a significant effect on salvageable straw lengths, bast fiber content and bast fiber yields.

Technical Report

Background and Objectives

Background

Farmers in Saskatchewan seed 350,000 to 450,000 ha of oilseed flax every year to produce seed destined mostly for export. In 2003, 2004 and 2005 average straw yields after the seed was removed varied between 56 to 4,200 kg/ha. Presently only 10-15% of this straw is salvaged and used in the manufacturing of specialty papers and plastic components. The flax straw that is not removed from the field, for these uses, is normally burnt or chopped and spread. Chopping and spreading has an economic cost and burning has negative economic cost and environmental impacts.

There is increasing interest in utilizing the flax straw that is presently uncollected. Recent market surveys and on-going research indicate that there are many potential products that could utilize flax fibers to complement or replace glass, synthetic and cotton fibers. If flax fibers were used more extensively in such products, it would increase the demand for flax straw, reduce the amount of flax straw that is burnt, and increase farmers' income from growing flax.

However, processing flax straw into industrial-grade fiber is not always profitable because of variations in fiber content and fiber yield. Biolin Research has developed a Near InfraRed (NIR) system to estimate the bast fiber content in unretted flax stems.

Objectives of the Study

The objectives of this study were to:

LONG TERM - Give producers, processors, breeders and potential investors the information they require to create profitable flax fiber based industries in Saskatchewan, and

SHORT TERM - Determine how a processor's fiber yields can be affected by location, variety and type of year.

Experimental Methods

- 1,596 straw samples were collected from nineteen regional variety trial sites over three years, and 619 straw samples were collected from four genetic progress trial sites in Saskatchewan in the fall of 2003, 2004 and 2005 after the seed was harvested. In total, the straw from 30 flax varieties was collected. Straw was not collected from all sites due to the decision by farm managers to abandon some regional flax variety trial sites in Saskatchewan due to abnormal drought conditions and the subsequent poor performance of the flax at these sites. Straw was also not collected from all sites due to short or sparse straw in plots in response to dry conditions and the cutting of straw short to harvest all the seed.

- During seed harvest of the plots, the cutting bar of the plot harvester was raised such that it just cut below the seed bolls. This was done to maximize the length of straw left standing to obtain an

indication of the maximum yield of straw that could be obtained if flax was "straight cut" instead of being swathed.

- After the seed was harvested, four ¼ meter square sub-samples of flax straw were taken at random from each plot and blended together to make one sample.

- The samples were transported to Biolin's processing centre in Saskatoon and conditioned over a minimum 24-hour period to reduce moisture content and weight.

- The samples were weighed and the weight was converted to kg/ha of salvaged straw for future use in calculating fiber yield/ha.

- All samples were analyzed for bast fiber content using a NIR machine (FOSS 6500). This was done by taking the straw from a sub-sample and scanning and re-arranging it five times to create a five scan average for each sub-sample. Software then used a database of historical scans to convert, as precisely as possible, the new sub-sample scans to bast fiber content readings.

- Selected sub-samples were also processed using a manual method to extract bast fiber. The bast fiber content was then expressed as a percent of the unretted straw. The resulting data was then compared with the original data from NIR analysis.

- Data generated from the salvaged straw weights and the NIR scans was entered into Excel spreadsheets. The fiber yield in kg/hectare was calculated from the fiber content results and salvaged straw weights.

- The data was analyzed using regression methods with binary variables to determine if there are statistically significant relationships between yields, varieties, and locations of oilseed flax production in Saskatchewan. The reader should note one common statistical method used to analyze data from agronomic trials is Analysis of Variance. In general, when analysis of variance is used, it only shows if a particular result is significantly different from other results. Regression analysis is another statistical tool that can be used to pinpoint significant differences in the results of agronomic trials. In the past, regression analysis was often not done because it required

significantly more computing power than was readily available to most agronomists. However, with the advent of personal computers and spreadsheets with regression analysis features, regression analysis is becoming the preferred method of analyzing agronomic data because it not only shows if the results are significantly different, it also estimates the size of these differences.

- A report was written summarizing the findings and conclusions of this study.

Results and Discussion

Saskatchewan SAC and Agricore United Solin Trials

Appendix A contains printouts of the data resulting from the collection, preparation and fiber yield determination of samples of 30 oilseed flax varieties collected from sixteen variety trials collected from SAC. Appendix B presents the results of regression equations that were run on the data in Appendix A to identify explanatory variables that have a statistically significant impact on bast fiber content and yield. The equations that are presented in Appendix B were selected as being those that make best use of the data that was generated from the 2003 to 2005 trials.

The early frost and late fall conditions at many sites in Saskatchewan in 2003 and 2004 mean that the results may not indicate the fiber contents or yields to be expected in more normal years. We do not know how much bias and misleading information was generated by these conditions. However, the information provided by these abnormal years is still very valuable because normal is not always.

Sources and Usefulness of Oilseed Flax Straw Samples

At the onset of this project, it was initially expected that oilseed flax straw would be available from regional variety trials at 19 sites in Saskatchewan for the period of the project. Due to weather, harvest and pre-winter preparation of land and the reorganization of the Regional Variety program, not all 19 sites were suitable to collect from each year, and thus straw was also collected from the Agricore United Regional Solin Trials. Samples were collected from Indian Head (Agricore United trial), Kelvington (Agricore United trial), North Battleford (Agricore United trial), Saskatoon (Agricore United LV04T trial), Canora, Indian Head, Kelvington, Kernen, Lashburn, Melfort, North Battleford, Outlook-CSIDC, Outlook-Howarden, Outlook-Knapik, Outlook-Pederson, Redvers, Regina and Scott. In 2003, plots at Redvers received so little rain that either the trials were destroyed before seed harvest or there was no straw to salvage after the seed was harvested. The extremely dry conditions at many sites in Saskatchewan mean that the results may not indicate the fiber contents or yields to be expected in more normal years. In 2004, all plots at Regina received so little rain that the trials were destroyed before seed harvest, and SAC plots at Kelvington were worked over by the farmer before the Biolin

staff could get there to harvest them. In 2005, technological problems, hail and frost in some areas in August and a early snowfall in November caused delays and some trials were not suitable for selection.

From 2003 to 2005, the Saskatchewan Regional Flax Variety Program underwent various changes from policy changes (where the regional variety trial program was conducted solely by the University of Saskatchewan Crop Development Center with one contact in 2003 to multiple administrators and contacts in 2005) to varietal changes

- The regional variety trial program in 2003 consisted of thirteen conventional oilseed flax varieties, three linola varieties and one solin variety.
- 2004 regional variety trial program consisted of fourteen conventional oilseed flax varieties that had ten similar to 2003, three linola varieties with two similar to 2003, and one solin variety that was similar to 2003.
- In 2005 there was seven conventional oilseed flax varieties with three similar to 2003 and five similar to 2004, three linola varieties with two similar to 2003 and 2004, and one solin variety that was similar to 2003 and 2004
- The Saskatchewan Agricore United sites in 2004 each had three conventional flax varieties, five linola varieties, and one solin variety.
- The Saskatchewan Agricore United sites in 2005 each had two conventional flax varieties that were similar to 2004, three linola varieties that were similar to 2004, and four solin varieties with one similar to 2004.

For most varieties, straw samples were available from three replications at each site. For the purpose of data analysis in this report, CDC Gold was used as the "check" in Saskatchewan variety trials and Agricore United variety trials.

Sources of Error

Different varieties mature at somewhat different times, however, all the straw at one location is cut and harvested on the same day. Since some varieties are not as mature, their bast fibers do not develop equally; hence the calculated fiber content can vary above or below what its "true" value would be if the variety was left to mature.

In the 2004 SAC trials, the trial managers wrote off Indian Head and Outlook CSIDC for seed analysis. Straw was hand pulled, the seed bolls were cut off, and the remaining straw was tested.

In 2005, Scott experienced over average moisture and the straw samples did not dry properly at harvest and Biolin technicians experienced fiber separation when preparing the samples for NIR. The Agricore United site at Dixon was not collected due to seed not drying out enough to be harvestable.

The NIR protocol will also have variance or error associated with it. The following is a short list of some of the factors that can cause such variance in NIR protocols.

- The straw being tested may contain chemical substances or microorganisms that are undetected but affect part of the spectra under consideration.

- The straw samples may not be properly and/or consistently mixed, prepared or placed in the sampling box. Biolin staff has extensive experience in representative sampling in flax straw plots and thus samples gathered and tested by Biolin technicians may have less error than those collected by other organizations.

We are continuing to try to eliminate or reduce these possible sources of error but realize that there will always be a test variance or error term associated with our results. The goal then is to reduce it and learn to take it into account when presenting results.

Results

Table 1 presents the fiber content, fiber yield and seed yield from each soil zone area. The results are indexed to Vimy. The data on which the index numbers are based is found in Appendix A. The data on which the index numbers are based are found in Appendix A.

In 2004, Outlook-Knapik and Indian Head sites were written off by trial managers due to c.v.'s of seed being higher than 15%. Biolin Research Inc staff collected the straw with the seeds boll heads still on the plants and hand cut the straw. As the figures show, when a farmer or plot technician takes the priority off the seed, the straw yield can increase dramatically. In the following results the data for Indian Head and Outlook-Knapik have been reported separate due to a huge bias caused by human versus machine harvesting of seed.

The four sites with the highest average salvageable straw yields Indian Head(2004) - Agricore United Site (1,956 kg/ha), Saskatoon(2005) – Agricore United Site (1,754 kg/ha), Indian Head(2005) - (1,628 kg/ha) (1,380 kg/ha), and Lashburn(2004) (1,464 kg/ha), while the four lowest average salvageable straw yields were found at Outlook-CSIDC(2005) (259 kg/ha), Outlook - Weiterman(2005) (209 kg/ha), Redvers(2005) (194 kg/ha), Scott(2005) (157 kg/ha). The four sites with the highest average salvageable straw yields had an average salvageable straw yield that was 8.2 times greater than the average salvageable straw yield of the four sites with the lowest average salvageable straw yield. The salvageable straw yield of the highest average salvageable straw yield location (Indian Head - Agricore United Site) was over nine times the lowest average salvageable straw yield location (Scott) (see Table 1). Salvageable Straw yields of hand harvested trials at Indian Head(2004) and Outlook-Knapik were 3,457 kg/ha and 3,489 kg/ha.

Table 1 - 2003 to 2005 Averages from Regional Flax Trials

	Area 2 - Dark Brown														
	Kernen									Saskatoon					
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
										LV04T	LV04T	LV04T	L05MT	L05MT	L05MT
Raw Data	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**
CDC Arras	9.3%	29	312	17.2%	141	766									
CDC Bethune	10.0%	35	347	17.4%	166	907	12.7%	79	611	19.6%	93	456	21.0%	378	1,803
AC Carnduff	12.2%	45	374	18.2%	66	389									
FP2102				19.0%	177	905									
FP2107				17.8%	155	776									
FP2112				18.2%	164	809	14.0%	87	622						
FP2119				19.6%	138	715	13.2%	84	640						
FP 2137							12.3%	56	477						
FP 2141							14.0%	119	850						
AC Hanley (FP 1094)	12.3%	40	326	18.8%	130	663									
AC Lightning (FP 1069)	9.7%	48	500	16.3%	161	997									
AC MacBeth (FP 1096)	9.6%	34	355	17.8%	121	743				17.9%	71	374	18.8%	329	1,756
AC McDuff															
CDC Mons (FP 2044)	10.6%	40	381	16.3%	169	855	12.6%	84	669						
CDC Normandy	10.4%	33	319												
CDC Valour	10.7%	39	367												
AC Watson	11.8%	30	256							22.1%	109	477			
Prairie Blue (FP 2024)	11.9%	44	364	17.4%	91	541	15.5%	109	702						
Taurus	10.2%	31	310	19.5%	125	663									
Vimy	11.4%	42	367	17.1%	85	469									
Solin															
CDC Gold (SP 2100)	12.6%	34	266	20.2%	63	309	15.3%	62	408	23.6%	138	579	23.5%	347	1,479
Linola™ 1084	14.0%	47	336												
Linola™ 2047 (SP 2047)	10.2%	38	370	16.6%	124	669	13.9%	87	636	20.9%	115	548	21.7%	488	2,261
Linola 2090 (SP 2090)	11.7%	37	320	16.8%	114	562	14.7%	54	364	21.4%	105	488	22.3%	326	1,456
Linola 2126				16.0%	143	862				17.7%	92	494	17.4%	277	1,575
Linola 2149										22.3%	85	383			
Linola 2167										22.2%	128	572			
Nulin 12(CR 12)													23.4%	245	1,050
SP 2149							14.5%	90	619				25.6%	539	2,108
SP 2167													22.4%	521	2,297
Field Average (%)	11.2%	38	345	17.8%	130	700	13.9%	83	600	20.8%	104	486	21.8%	383	1,754
LSD	2.0%	17	142	3.7%	103	453	2.0%	49	367	5.1%	91	350	2.2%	171	745
c.v.	14.0%	25.8%	23.8%	12.0%	37.1%	30.7%	10.1%	36.0%	35.6%	14.3%	43.3%	35.1%	11.8%	33.3%	29.4%

Area 2 - Dark Brown

	Redvers						Regina						Scott								
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
Raw Data	2004	2004	2004	2005	2005	2005	2003	2003	2003	2005	2005	2005	2003	2003	2003	2004	2004	2004	2005	2005	2005
CDC Arras	16.6%	79	486				9.0%	31	354				12.9%	121	923	17.5%	185	1,108			
CDC Bethune	17.7%	150	844	13.6%	30	220				16.7%	59	358	12.9%	126	973	17.9%	198	1,142	14.6%	25	167
AC Carnduff	16.4%	220	1,368				7.0%	26	371				14.6%	129	885	18.3%	247	1,268			
FP2102	17.8%	153	866													18.2%	242	1,274			
FP2107	20.1%	189	954													19.0%	331	1,836			
FP2112	18.0%	158	925	16.9%	26	154				19.5%	113	571				19.6%	229	1,194	15.3%	24	156
FP2119	16.9%	256	1,575	18.5%	31	167				18.4%	80	437				18.5%	245	1,299	14.8%	24	162
FP 2137				15.1%	28	187				15.2%	43	281							13.0%	20	150
FP 2141				16.2%	31	194				19.8%	105	533							13.1%	18	138
AC Hanley (FP 1094)	20.0%	211	1,089				8.5%	23	274				15.2%	131	858	20.0%	213	1,078			
AC Lightning (FP 1069)	14.9%	171	1,173				6.4%	19	305				13.5%	124	927	17.2%	384	2,082			
AC MacBeth (FP 1096)	16.8%	121	704				7.6%	24	300				14.2%	109	770	17.1%	255	1,518			
AC McDuff																					
CDC Mons (FP 2044)	16.9%	164	953	14.4%	29	201	7.5%	26	342	16.7%	107	623	11.8%	91	770	19.0%	247	1,358	15.9%	18	116
CDC Normandy							9.0%	26	292				13.6%	70	518						
CDC Valour							9.3%	24	256				14.3%	84	582						
AC Watson							8.4%	25	302				15.6%	109	700						
Prairie Blue (FP 2024)	19.4%	226	1,196	14.0%	31	222	10.4%	30	287	19.5%	82	419	14.0%	131	937	18.2%	303	1,520	15.1%	21	139
Taurus	18.7%	187	991				8.4%	26	314				14.3%	134	934	17.8%	284	1,519			
Vimy	17.3%	132	767				8.6%	26	311				14.4%	100	694	19.2%	165	846			
Solin																					
CDC Gold (SP 2100)	18.3%	137	768	19.4%	41	213	10.3%	12	121	21.2%	70	329	16.3%	128	785	20.8%	285	1,408			
Linola™ 1084							11.2%	45	400				16.5%	158	959						
Linola™ 2047 (SP 2047)	18.0%	160	888	18.0%	30	169	8.2%	25	309	17.5%	83	475	14.6%	160	1,091	18.3%	303	1,679	15.5%	25	156
Linola 2090 (SP 2090)	17.5%	240	1,397	15.7%	31	198	8.1%	18	222	17.4%	59	339	15.2%	127	839	18.3%	233	1,215	15.5%	28	179
Linola 2126	12.9%	161	1,237													15.9%	304	1,953			
Linola 2149																					
Linola 2167																					
Nulin 12(CR 12)																					
SP 2149				18.6%	39	212				20.0%	89	446							16.3%	27	169
SP 2167																					
Field Average (%)	17.4%	173	1,010	16.4%	32	194	8.6%	25	297	18.4%	81	437	14.3%	119	832	18.4%	259	1,405	14.8%	23	157
LSD	2.3%	162	985	2.8%	12	65	1.9%	13	150	1.8%	63	335	1.3%	29	173	1.3%	63	335	2.6%	11	53
c.v.	11.5%	51.5%	53.7%	14.3%	21.5%	19.1%	16.6%	34.0%	29.3%	10.5%	44.3%	42.2%	9.4%	22.6%	20.1%	7.0%	47.8%	46.4%	10.3%	23.4%	16.8%

	Area 2 - Dark Brown									Area 3 - Black														
	Watrous									BATTLEFORD			Battleford			Canora								
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
										LV041	LV041	LV041												
Raw Data	2003	2003	2003	2004	2004	2004	2005	2005	2005	2004	2004	2004	2004	2004	2004	2003	2003	2003	2004	2004	2004	2005	2005	2005
CDC Arras	17.1%	212	1,231	16.7%	263	1,557							18.0%	111	644	16.2%	192	1,179	17.4%	157	983			
CDC Bethune	16.8%	194	1,154	17.8%	331	1,804	18.3%	231	1,210	19.9%	83	416	18.2%	174	995	16.2%	136	846	19.6%	197	1,204	14.7%	154	1,044
AC Carnduff	16.7%	151	903	15.7%	115	716							17.2%	150	764	17.6%	131	738	18.5%	172	1,044			
FP2102				17.1%	190	1,110							19.3%	130	679				19.1%	272	1,489			
FP2107				18.9%	206	1,072							19.9%	162	867				19.2%	250	1,355			
FP2112				15.4%	219	1,351	20.3%	194	948				20.3%	116	637				18.1%	198	1,132	15.4%	171	1,097
FP2119				19.3%	317	1,604	18.0%	304	1,629				19.3%	166	813				18.0%	210	1,225	14.7%	116	784
FP 2137							18.4%	242	1,281													14.4%	163	1,136
FP 2141							19.6%	183	938													14.9%	157	1,043
AC Hanley (FP 1094)	16.7%	157	950	16.3%	280	1,636							19.4%	143	758	17.6%	196	1,098	20.0%	208	1,172			
AC Lightning (FP 1069)	14.8%	151	1,021	18.1%	206	1,133							16.4%	147	877	15.3%	128	845	19.3%	231	1,382			
AC MacBeth (FP 1096)	15.8%	176	1,107	16.3%	175	998				20.9%	150	692	16.1%	170	953	13.8%	100	746	16.8%	219	1,378			
AC McDuff																								
CDC Mons (FP 2044)	16.1%	166	1,033	15.1%	257	1,675	17.1%	175	1,044				19.6%	126	770	14.9%	152	1,003	18.2%	204	1,286	14.1%	124	874
CDC Normandy	15.5%	146	949													15.1%	132	885						
CDC Valour	16.3%	168	1,027													15.5%	115	741						
AC Watson	17.1%	140	818							19.4%	94	503				17.0%	144	839						
Prairie Blue (FP 2024)	16.4%	132	785	17.7%	230	1,320	19.7%	251	1,259				16.3%	165	954	17.3%	169	995	18.2%	236	1,272	15.4%	151	967
Taurus	16.9%	182	1,072	17.0%	223	1,317							18.6%	182	936	16.6%	155	940	18.3%	209	1,209			
Vimy	16.7%	173	1,039	17.3%	257	1,471							17.8%	111	621	16.0%	142	885	18.7%	201	1,179			
Solin																								
CDC Gold (SP 2100)	19.0%	157	826	16.8%	235	1,366	23.9%	237	979	18.6%	118	647	19.1%	148	715	18.8%	149	797	17.5%	182	1,058	16.3%	105	637
Linola™ 1084	19.1%	186	976													19.2%	216	1,142						
Linola™ 2047 (SP 2047)	16.6%	186	1,121	18.4%	246	1,342	19.4%	237	1,173	22.6%	124	551	18.5%	154	913	16.3%	164	1,018	18.7%	209	1,272	14.2%	144	1,033
Linola 2090 (SP 2090)	17.5%	201	1,150	16.2%	240	1,475	20.3%	175	845	23.7%	125	526	20.3%	122	713	17.4%	198	1,176	18.4%	205	1,174	15.2%	88	581
Linola 2126				19.3%	263	1,363				21.5%	149	689	16.6%	141	879				16.6%	173	1,222			
Linola 2149										19.6%	106	534												
Linola 2167										21.5%	113	519												
Nulin 12(CR 12)																								
SP 2149							23.0%	245	1,061													15.2%	159	1,033
SP 2167																								
Field Average (%)	16.8%	169	1,009	17.2%	236	1,351	19.8%	225	1,124	20.8%	118	564	18.4%	146	805	16.5%	154	934	18.4%	207	1,224	15.0%	139	930
LSD	1.3%	62	352	4.4%	175	784	5.2%	176	707	5.7%	318	56	2.5%	84	391	2.6%	115	693	3.2%	127	601	1.4%	107	671
c.v.	7.4%	22.3%	20.9%	14.2%	41.0%	34.0%	15.7%	39.5%	34.3%	14.3%	29.5%	33.9%	9.9%	39.0%	37.5%	11.1%	40.8%	38.7%	9.6%	30.8%	27.7%	5.9%	39.7%	38.2%

	Area 3 - Black															Area 3 - Black					
	Indian Head						Indian Head									Lashburn			Melfort		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
	LV04T	LV04T	LV04T	L05MT	L05MT	L05MT															
Raw Data	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2004**	**2004**	**2004**	**2004**	**2004**	**2004**
CDC Arras							11.9%	102	857	16.6%	816	4,264				16.8%	185	1,108	16.0%	157	983
CDC Bethune	19.6%	418	2,123	14.6%	222	1,523	11.7%	128	1,099	18.2%	602	2,897	16.7%	48	284	17.3%	198	1,142	16.4%	197	1,204
AC Carnduff							12.2%	117	953	16.7%	795	3,780				19.5%	247	1,268	16.5%	172	1,044
FP2102										17.2%	897	4,601				18.9%	242	1,274	18.2%	272	1,489
FP2107										17.6%	710	3,726				18.2%	331	1,836	18.3%	250	1,355
FP2112										16.2%	577	3,343	17.8%	66	371	19.2%	229	1,194	17.6%	198	1,132
FP2119										15.7%	954	4,366	18.6%	107	572	18.8%	245	1,299	17.2%	210	1,225
FP 2137													17.1%	77	449						
FP 2141													16.6%	83	504						
AC Hanley (FP 1094)							13.4%	128	947	17.0%	758	3,454				19.5%	213	1,078	17.6%	208	1,172
AC Lightning (FP 1069)							11.0%	95	862	16.8%	611	3,092				18.2%	384	2,082	16.7%	231	1,382
AC MacBeth (FP 1096)	21.5%	340	1,580	13.2%	254	1,922	10.9%	108	960	15.4%	720	3,507				16.5%	255	1,518	15.7%	219	1,378
AC McDuff																					
CDC Mons (FP 2044)							12.2%	155	1,266	15.4%	730	3,254	15.8%	108	696	18.5%	247	1,358	15.7%	204	1,286
CDC Normandy							11.1%	97	858												
CDC Valour							11.5%	97	841												
AC Watson	21.0%	348	1,671				13.9%	127	921												
Prairie Blue (FP 2024)							13.4%	159	1,176	16.7%	911	4,050	18.1%	56	313	20.2%	303	1,520	18.6%	236	1,272
Taurus							13.2%	179	1,362	18.4%	545	3,234				19.0%	284	1,519	17.3%	209	1,209
Vimy							12.7%	119	944	16.0%	720	3,782				19.6%	165	846	17.1%	201	1,179
Solin																					
CDC Gold (SP 2100)	23.7%	409	1,730	17.3%	289	1,658	12.8%	145	1,119	16.4%	383	2,249	21.4%	76	352	19.6%	285	1,408	17.3%	182	1,058
Linola™ 1084							14.7%	176	1,210												
Linola™ 2047 (SP 2047)	21.8%	534	2,477	13.0%	221	1,645	11.8%	127	1,075	14.9%	463	2,340	16.8%	74	441	18.0%	303	1,679	16.4%	209	1,272
Linola 2090 (SP 2090)	16.4%	403	2,463	17.4%	331	1,913	13.7%	101	743	15.6%	532	2,889	19.4%	127	660	19.1%	233	1,215	17.4%	205	1,174
Linola 2126	19.9%	292	1,577	15.4%	266	1,725				12.2%	735	3,401				15.6%	304	1,953	14.2%	173	1,222
Linola 2149	22.2%	455	2,056														455	2,056			
Linola 2167	21.5%	413	1,927														413	1,927			
Nulin 12(CR 12)				18.1%	233	1,289															
SP 2149				17.3%	265	1,499							19.3%	100	517						
SP 2167				14.1%	215	1,478															
Field Average (%)	20.8%	401	1,956	15.6%	255	1,628	12.5%	127	1,011	16.3%	692	3,457	18.0%	85	476	18.5%	276	1,464	16.9%	207	1,224
LSD	5.1%	206	1,019	2.8%	148	815	1.8%	56	401	1.7%	183	974	1.9%	63	364	1.9%	189	977	1.8%	71	359
c.v.	14.3%	28.2%	28.7%	14.5%	29.3%	25.2%	11.2%	29.7%	25.1%	9.8%	20.6%	16.3%	9.8%	44.0%	45.4%	8.3%	40.6%	40.2%	8.2%	21.0%	17.4%

	Area 4 - Moist Black														
	Kelvington						Kelvington						Valparaiso		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
	LV04T	LV04T	LV04T	L05MT	L05MT	L05MT									
Raw Data	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2003**	**2003**	**2003**	**2005**	**2005**	**2005**	**2005**	**2005**	**2005**
CDC Arras							12.4%	49	404						
CDC Bethune	20.3%	131	665	19.2%	193	1,011	12.4%	39	314	19.5%	181	959	21.9%	166	746
AC Carnduff							12.8%	59	432						
FP2102															
FP2107															
FP2112										20.9%	243	1,138	23.4%	183	779
FP2119										23.7%	257	1,107	22.6%	186	834
FP 2137										22.3%	249	1,138	19.3%	179	925
FP 2141										25.1%	335	1,335	22.8%	254	1,118
AC Hanley (FP 1094)							11.6%	96	817						
AC Lightning (FP 1069)							8.9%	52	465						
AC MacBeth (FP 1096)	19.7%	127	654	18.5%	198	1,065	11.0%	34	333						
AC McDuff															
CDC Mons (FP 2044)							6.8%	40	400	21.1%	276	1,317	19.7%	175	911
CDC Normandy							13.0%	61	501						
CDC Valour							12.4%	32	273						
AC Watson	19.9%	99	500				11.4%	38	321						
Prairie Blue (FP 2024)							12.0%	107	884	22.6%	284	1,229	19.1%	159	841
Taurus							10.8%	75	678						
Vimy							12.3%	64	537						
Solin															
CDC Gold (SP 2100)	23.2%	133	569	25.1%	200	797	12.1%	40	325	22.5%	191	856	23.4%	145	623
Linola™ 1084							12.1%	32	274						
Linola™ 2047 (SP 2047)	20.0%	105	530	21.6%	240	1,110	11.5%	13	117	24.2%	268	1,111	17.6%	174	979
Linola 2090 (SP 2090)	19.6%	103	511	20.6%	171	829	11.7%	70	592	21.3%	247	1,136	22.2%	170	780
Linola 2126	19.7%	118	603	15.2%	143	939									
Linola 2149	21.6%	125	577												
Linola 2167	23.6%	141	594												
Nulin 12(CR 12)				25.5%	281	1,112									
SP 2149				26.3%	323	1,227				19.5%	182	958	21.3%	178	836
SP 2167				22.4%	231	1,031									
Field Average (%)	20.8%	120	578	21.6%	220	1,014	11.5%	53	451	22.1%	247	1,117	21.2%	179	852
LSD	5.8%	53	230	2.0%	85	366	2.9%	61	493	6.8%	120	459	6.4%	60	201
c.v.	14.3%	24.2%	20.0%	16.8%	29.7%	20.7%	11.9%	57.9%	58.9%	16.0%	28.8%	22.7%	16.5%	21.3%	18.3%

	Irrigation														
	Outlook - CSIDC									Outlook - Howarden			Outlook - Knapik		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
Raw Data	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**
CDC Arras	14.0%	120	844							16.4%	176	1,061	18.5%	510	2,616
CDC Bethune	13.0%	95	727				18.1%	45	252	17.2%	189	1,100	20.0%	813	4,062
AC Carnduff	17.3%	138	798	15.4%	135	880				16.0%	130	808	17.5%	635	3,614
FP2102													22.8%	674	2,918
FP2107													21.9%	1,086	5,084
FP2112							17.5%	40	223				21.4%	698	3,245
FP2119							18.6%	44	237				18.5%	613	3,313
FP 2137							17.4%	50	292						
FP 2141							14.9%	42	284						
AC Hanley (FP 1094)	14.8%	116	772	18.2%	198	1,094				16.9%	163	944	20.0%	449	2,209
AC Lightning (FP 1069)	15.0%	114	760							16.2%	153	942	18.8%	713	3,734
AC MacBeth (FP 1096)	15.4%	118	773	16.0%	230	1,437				15.8%	152	954	19.3%	716	3,683
AC McDuff													18.1%	440	2,416
CDC Mons (FP 2044)	13.5%	140	1,027				15.6%	41	260	15.8%	109	690	19.7%	696	3,470
CDC Normandy	11.5%	71	621							13.4%	76	563			
CDC Valour	10.1%	82	793							13.4%	119	892			
AC Watson	14.4%	97	668							16.4%	132	803			
Prairie Blue (FP 2024)	15.9%	123	767	13.1%	116	876	18.8%	47	251	18.9%	227	1,198	21.1%	842	4,113
Taurus	16.5%	155	940							17.9%	207	1,157	21.3%	1,180	5,367
Vimy	13.2%	120	913							12.3%	44	355	16.6%	423	2,421
Solin															
CDC Gold (SP 2100)	15.5%	101	654	15.5%	160	1,002	19.8%	56	282	15.1%	84	548	20.1%	719	3,455
Linola™ 1084	18.6%	203	1,084	18.1%	165	912				19.2%	132	695	22.8%	784	3,413
Linola™ 2047 (SP 2047)	13.7%	81	596	17.5%	134	766	16.7%	43	258	16.7%	177	1,067	17.7%	645	3,539
Linola 2090 (SP 2090)	14.5%	117	810	15.1%	161	1,062	16.4%	41	252	17.1%	136	797	21.5%	845	3,875
Linola 2126				17.0%	161	947							16.2%	530	3,233
Linola 2149															
Linola 2167															
Nulin 12(CR 12)															
SP 2149							19.7%	54	275						
SP 2167															
Field Average (%)	14.5%	117	797	16.2%	162	997	17.7%	46	259	16.2%	142	857	19.7%	701	3,489
LSD	2.8%	46	238	5.9%	91	356	2.7%	14	78	1.9%	73	352	4.9%	534	2,215
c.v.	16.5%	32.5%	22.3%	15.7%	27.0%	19.8%	11.0%	18.2%	16.0%	11.2%	36.1%	30.4%	15.4%	45.5%	38.1%

	Irrigation											
	Outlook - Pederson									Weiterman		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
Raw Data	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2005**	**2005**	**2005**
CDC Arras	15.3%	104	676									
CDC Bethune	15.1%	98	650				15.8%	41	260	14.9%	36	238
AC Carnduff	16.5%	129	782	14.5%	120	828						
FP2102				12.7%	121	957						
FP2107												
FP2112							15.9%	44	276	14.9%	26	179
FP2119							17.5%	35	203	14.9%	30	202
FP 2137							15.1%	42	281	15.1%	29	195
FP 2141							17.5%	53	297	13.2%	29	221
AC Hanley (FP 1094)	16.7%	155	929									
AC Lightning (FP 1069)	13.9%	121	876									
AC MacBeth (FP 1096)	13.8%	91	656									
AC McDuff												
CDC Mons (FP 2044)	14.4%	136	947	11.4%	64	562	15.6%	45	287	14.1%	32	224
CDC Normandy	15.0%	132	880									
CDC Valour	13.9%	89	645									
AC Watson	17.4%	107	613									
Prairie Blue (FP 2024)	16.9%	156	924				17.1%	47	276	15.4%	37	240
Taurus	17.1%	174	1,025									
Vimy	14.8%	79	537									
Solin												
CDC Gold (SP 2100)	15.5%	104	674	12.2%	284	2,334	15.8%	42	268	15.2%	23	151
Linola™ 1084	18.3%	168	919									
Linola™ 2047 (SP 2047)	14.2%	112	792				14.2%	39	274	15.3%	33	213
Linola 2090 (SP 2090)	15.4%	107	697				16.0%	35	220	13.2%	27	208
Linola 2126				18.9%	419	2,217						
Linola 2149												
Linola 2167												
Nulin 12(CR 12)												
SP 2149							16.2%	42	254	16.4%	36	216
SP 2167												
Field Average (%)	15.5%	121	778	13.9%	202	1,380	16.1%	42	263	14.8%	31	209
LSD	1.3%	35	217	0.3%	307	2,571	3.1%	19	96	2.1%	12	69
c.v.	9.4%	24.9%	21.2%	27.5%	68.8%	105.3%	10.6%	23.7%	19.6%	8.9%	21.4%	18.7%

NOTES:

LV04T & L05MT denotes grown in Agricore United Private Trials

Field averages are the average of all varieties at that location, expressed in actual units (Salvaged Straw Wt in kg/ha, fiber content in percentage, fiber yield in kg/ha)

Fiber Content is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' collected in field times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'Fiber Content (%)'

Table 2 - Fiber Content, Fiber Yield and Seed Yield Results from 2003 to 2005 Expressed as Index Numbers of CDC Gold

Indexed on CDC Gold, (CDC Gold = 100)	Area 2 - Dark Brown																				
	Kernen									Saskatoon						Redvers					
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
										LV04T	LV04T	LV04T	L05MT	L05MT	L05MT						
Raw Data	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**
CDC Arras	74	86	117	85	222	248										91	58	63			
CDC Bethune	79	103	131	86	263	293	83	128	150	83	67	79	89	109	122	97	109	110	70	73	103
AC Carnduff	96	134	140	90	105	126										90	161	178			
FP2102				94	279	293										98	112	113			
FP2107				88	246	251										110	138	124			
FP2112				90	260	262	92	141	153							98	115	121	87	64	72
FP2119				97	218	231	86	136	157							93	187	205	95	76	79
FP 2137							80	90	117										78	69	88
FP 2141							91	193	209										83	77	91
AC Hanley (FP 1094)	98	118	122	93	205	215										109	154	142			
AC Lightning (FP 1069)	76	142	188	81	254	323										82	125	153			
AC MacBeth (FP 1096)	76	101	133	88	191	240				76	52	65	80	95	119	92	88	92			
AC McDuff	98	118	122	93	205	215										109	154	142			
CDC Mons (FP 2044)	84	119	143	81	267	277	82	135	164							92	120	124	74	71	95
CDC Normandy	83	99	120																		
CDC Valour	85	116	138																		
AC Watson	93	88	96							94	79	82									
Prairie Blue (FP 2024)	94	131	137	86	143	175	101	177	172							106	165	156	72	77	104
Taurus	81	92	116	96	197	215										102	137	129			
Vimy	90	124	138	85	134	152										95	96	100			
Solin																					
CDC Gold (SP 2100)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Linola™ 1084	111	139	126																		
Linola™ 2047 (SP 2047)	81	113	139	82	196	217	90	140	156	89	83	95	92	141	153	98	117	116	93	74	79
Linola 2090 (SP 2090)	93	110	120	83	180	182	96	87	89	91	76	84	95	94	98	96	175	182	81	76	93
Linola 2126				79	226	279				75	67	85	74	80	107	71	118	161			
Linola 2149										95	62	66									
Linola 2167										94	93	99									
Nulin 12(CR 12)													100	71	71						
SP 2149							95	147	152				109	155	143				96	96	99
SP 2167													96	150	155						

Indexed on CDC Gold, (CDC Gold = 100)

Area 2 - Dark Brown

	Regina						Scott						Watrous								
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
Raw Data	**2003**	**2003**	**2003**	**2005**	**2005**	**2005**	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**
CDC Arras	87	251	294				79	94	118	84	65	79	90	149	135	99	112	114			
CDC Bethune				79	85	109	79	98	124	86	69	81	88	140	124	106	141	132	76	97	124
AC Carnduff	68	210	308				90	101	113	88	87	90	88	109	96	93	49	52			
FP2102										87	85	90				102	81	81			
FP2107										91	116	130				113	88	79			
FP2112				92	162	173				94	80	85				91	93	99	85	82	97
FP2119				87	115	133				89	86	92				115	135	117	75	128	166
FP 2137				72	62	85													77	102	131
FP 2141				94	151	162													82	77	96
AC Hanley (FP 1094)	83	189	227				93	102	109	96	75	77	88	115	100	97	119	120			
AC Lightning (FP 1069)	62	156	253				82	96	118	82	135	148	78	124	96	108	88	83			
AC MacBeth (FP 1096)	74	194	249				87	85	98	82	89	108	83	134	112	97	74	73			
AC McDuff	83	189	227				93	102	109	96	75	77	88	115	100	97	119	120			
CDC Mons (FP 2044)	73	208	284	79	154	189	72	71	98	91	87	96	85	125	106	90	109	123	72	74	107
CDC Normandy	87	211	242				83	55	66				82	115	93						
CDC Valour	90	197	213				88	65	74				86	124	107						
AC Watson	82	205	250				95	85	89				90	99	89						
Prairie Blue (FP 2024)	101	242	238	92	117	127	86	102	119	87	106	108	86	95	84	105	98	97	82	106	129
Taurus	82	214	261				88	104	119	86	100	108	89	130	116	101	95	96			
Vimy	84	212	258				88	78	88	92	58	60	88	126	110	103	110	108			
Solin																					
CDC Gold (SP 2100)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Linola™ 1084	109	362	332				101	123	122				100	118	118						
Linola™ 2047 (SP 2047)	79	204	256	83	119	144	90	124	139	88	106	119	87	136	119	110	105	98	81	100	120
Linola 2090 (SP 2090)	78	145	184	82	85	103	93	99	107	88	82	86	92	139	128	96	102	108	85	74	86
Linola 2126										76	107	139				115	112	100			
Linola 2149																					
Linola 2167																					
Nulin 12(CR 12)																					
SP 2149				94	128	135													96	103	108
SP 2167																					

Indexed on CDC Gold, (CDC Gold = 100)	Area 3 - Black																				
	BATTLEFORD			Battleford			Canora									Indian Head					
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
	LV04T	LV04T	LV04T													LV04T	LV04T	LV04T	L05MT	L05MT	L05MT
Raw Data	**2004**	**2004**	**2004**	**2004**	**2004**	**2004**	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**
CDC Arras				94	75	90	86	129	148	99	86	93									
CDC Bethune	107	71	64	95	117	139	86	91	106	112	108	114	90	146	164	83	102	123	84	77	92
AC Carnduff				90	101	107	93	88	93	106	94	99									
FP2102				101	87	95				109	149	141									
FP2107				104	109	121				110	137	128									
FP2112				106	78	89				104	109	107	94	163	172						
FP2119				101	112	114				103	115	116	90	110	123						
FP 2137													88	155	178						
FP 2141													91	150	164						
AC Hanley (FP 1094)				102	96	106	94	132	138	114	114	111									
AC Lightning (FP 1069)				86	99	123	81	86	106	110	127	131									
AC MacBeth (FP 1096)	112	128	107	84	115	133	73		94	96	120	130				91	83	91	76	88	116
AC McDuff				102	96	106	94	132	138	114	114	111									
CDC Mons (FP 2044)				102	85	108	79	102	126	104	112	122	87	117	137						
CDC Normandy							80	89	111												
CDC Valour							82	77	93												
AC Watson	104	80	78				90	97	105							89	85	97			
Prairie Blue (FP 2024)				85	111	133	92	113	125	104	129	120	94	143	152						
Taurus				97	123	131	88	104	118	105	115	114									
Vimy				93	75	87	85	96	111	107	110	111									
Solin																					
CDC Gold (SP 2100)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Linola™ 1084							102	145	143												
Linola™ 2047 (SP 2047)	122	106	85	97	104	128	86	110	128	107	115	120	87	137	162	92	131	143	75	76	99
Linola 2090 (SP 2090)	127	106	81	106	82	100	92	133	148	105	112	111	93	84	91	69	99	142	100	115	115
Linola 2126	115	127	106	87	95	123				95	95	115				84	71	91	89	92	104
Linola 2149	105	90	83													94	111	119			
Linola 2167	116	96	80													91	101	111			
Nulin 12(CR 12)																			105	81	78
SP 2149													93	151	162				100	92	90
SP 2167																			81	74	89

Indexed on CDC Gold, (CDC Gold = 100)	Area 3 - Black														
	Indian Head									Lashburn			Melfort		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
Raw Data	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2004**	**2004**	**2004**	**2004**	**2004**	**2004**
CDC Arras	93	71	77	101	213	190				85	65	79	93	86	93
CDC Bethune	91	88	98	111	157	129	78	63	81	88	69	81	95	108	114
AC Carnduff	95	81	85	102	207	168				99	87	90	96	94	99
FP2102				105	234	205				96	85	90	105	149	141
FP2107				107	185	166				93	116	130	106	137	128
FP2112				99	151	149	83	88	105	98	80	85	102	109	107
FP2119				96	249	194	87	141	163	96	86	92	100	115	116
FP 2137							80	101	128						
FP 2141							77	110	143						
AC Hanley (FP 1094)	105	89	85	104	198	154				99	75	77	102	114	111
AC Lightning (FP 1069)	86	66	77	103	160	138				93	135	148	97	127	131
AC MacBeth (FP 1096)	85	75	86	94	188	156				84	89	108	91	120	130
AC McDuff	105	89	85	104	198	154				99	75	77	102	114	111
CDC Mons (FP 2044)	96	107	113	94	191	145	74	142	198	94	87	96	91	112	122
CDC Normandy	86	67	77												
CDC Valour	90	67	75												
AC Watson	109	88	82												
Prairie Blue (FP 2024)	105	110	105	102	238	180	85	74	89	103	106	108	108	129	120
Taurus	103	124	122	113	142	144				97	100	108	100	115	114
Vimy	100	83	84	98	188	168				100	58	60	99	110	111
Solin															
CDC Gold (SP 2100)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Linola™ 1084	115	122	108												
Linola™ 2047 (SP 2047)	93	88	96	91	121	104	79	98	125	91	106	119	95	115	120
Linola 2090 (SP 2090)	107	70	66	95	139	128	91	168	187	97	82	86	101	112	111
Linola 2126				75	192	151				79	107	139	82	95	115
Linola 2149											160	146			
Linola 2167											145	137			
Nulin 12(CR 12)															
SP 2149							90	132	147						
SP 2167															

Indexed on CDC Gold, (CDC Gold = 100)	Area 4 - Moist Black														
	Kelvington						Kelvington						Valparaiso		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
	LV04T	LV04T	LV04T	L05MT	L05MT	L05MT									
Raw Data	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2003**	**2003**	**2003**	**2005**	**2005**	**2005**	**2005**	**2005**	**2005**
CDC Arras							103	124	124						
CDC Bethune	88	99	117	76	96	127	103	97	97	87	95	112	94	114	120
AC Carnduff							106	148	133						
FP2102															
FP2107															
FP2112										93	128	133	100	126	125
FP2119										105	135	129	96	128	134
FP 2137										99	131	133	82	123	149
FP 2141										112	175	156	97	175	180
AC Hanley (FP 1094)							96	241	252						
AC Lightning (FP 1069)							73	130	143						
AC MacBeth (FP 1096)	85	96	115	74	99	134	91	86	103						
AC McDuff							96	241	252						
CDC Mons (FP 2044)							57	99	123	94	144	154	84	121	146
CDC Normandy							108	153	154						
CDC Valour							103	80	84						
AC Watson	86	75	88				94	95	99						
Prairie Blue (FP 2024)							100	267	272	101	149	144	81	110	135
Taurus							90	188	209						
Vimy							102	161	165						
Solin															
CDC Gold (SP 2100)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Linola™ 1084							100	81	85						
Linola™ 2047 (SP 2047)	86	79	93	86	120	139	95	34	36	108	140	130	75	120	157
Linola 2090 (SP 2090)	85	77	90	82	85	104	97	175	182	95	129	133	95	117	125
Linola 2126	85	89	106	61	71	118									
Linola 2149	93	94	102												
Linola 2167	102	106	104												
Nulin 12(CR 12)				102	140	140									
SP 2149				105	161	154				87	95	112	91	122	134
SP 2167				89	115	129									

Indexed on CDC Gold, (CDC Gold = 100)	Irrigation																											
	Outlook - CSIDC									Howarden			Outlook - Knapik			Outlook - Pederson									Weiterman		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
Raw Data	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2005**	**2005**	**2005**
CDC Arras	91	119	129	116	213	190				109	210	194	92	71	76	99	99	100									
CDC Bethune	84	94	111	128	157	129				114	226	201	100	113	118	98	94	96				100	96	97	98	155	158
AC Carnduff	112	137	122	123	207	168	99	85	88	106	155	147	87	88	105	106	124	116	119	42	35						
FP2102				117	234	205							114	94	84				104	43	41						
FP2107				113	185	166							109	151	147												
FP2112				103	151	149							107	97	94							100	104	103	98	116	119
FP2119				129	249	194							92	85	96							111	83	76	99	131	134
FP 2137																						96	100	105	99	129	130
FP 2141																						111	124	111	87	126	147
AC Hanley (FP 1094)	96	114	118	128	198	154	117	124	109	112	194	172	99	62	64	108	148	138									
AC Lightning (FP 1069)	97	113	116	118	160	138				107	183	172	94	99	108	90	116	130									
AC MacBeth (FP 1096)	99	117	118	119	188	156	103	144	143	104	181	174	96	100	107	89	88	97									
AC McDuff	96	114	118	117	124	109				112	194	172	99	62	64	108	148	138									
CDC Mons (FP 2044)	87	138	157	130	191	145				105	130	126	98	97	100	93	131	141	94	23	24	99	105	107	93	139	149
CDC Normandy	74	70	95							89	91	103				97	127	131									
CDC Valour	65	81	121							88	142	163				90	85	96									
AC Watson	93	96	102							108	157	147				112	102	91									
Prairie Blue (FP 2024)	103	122	117	124	238	180	85	73	87	125	271	219	105	117	119	109	150	137				108	111	103	102	162	160
Taurus	107	153	144	101	142	144				119	247	211	106	164	155	110	167	152									
Vimy	85	118	140	113	188	168				82	52	65	83	59	70	96	76	80									
Solin																											
CDC Gold (SP 2100)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Linola™ 1084	120	200	166				116	103	91	127	158	127	114	109	99	118	161	136									
Linola™ 2047 (SP 2047)	88	80	91	122	121	104	113	84	76	110	212	195	88	90	102	91	108	118				90	92	102	101	143	141
Linola 2090 (SP 2090)	93	115	124	109	139	128	97	101	106	113	162	145	107	118	112	99	102	103				101	83	82	87	120	138
Linola 2126				126	192	151	109	101	95				81	74	94				155	147	95						
Linola 2149																											
Linola 2167																											
Nulin 12(CR 12)																											
SP 2149																						102	98	95	108	156	144
SP 2167																											

Table 3 - Fiber Content, Fiber Yield and Seed Yield Results from 2003 to 2005 Expressed as Index Numbers of Field Average

Indexed on Field 100)	Area 2 - Dark Brown																				
	Kernen									Saskatoon						Redvers					
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
										LV04T	LV04T	LV04T	L05MT	L05MT	L05MT						
Raw Data	2003	2003	2003	2004	2004	2004	2005	2005	2005	2004	2004	2004	2005	2005	2005	2004	2004	2004	2005	2005	2005
CDC Arras	83	76	90	97	109	109										95	46	48			
CDC Bethune	89	92	101	98	128	130	91	96	102	94	89	94	96	98	103	102	87	84	83	95	113
AC Carnduff	108	119	108	102	51	56										94	127	135			
FP2102				107	136	129										102	88	86			
FP2107				100	120	111										115	109	94			
FP2112				102	127	116	101	105	104							103	91	92	103	82	79
FP2119				110	107	102	95	101	107							97	148	156	113	97	86
FP 2137							88	67	80										92	89	96
FP 2141							101	144	142										99	99	100
AC Hanley (FP 1094)	110	105	94	106	100	95										114	122	108			
AC Lightning (FP 1069)	86	126	145	92	124	142										85	99	116			
AC MacBeth (FP 1096)	85	90	103	100	93	106				86	68	77	86	86	100	96	70	70			
AC McDuff																					
CDC Mons (FP 2044)	94	105	110	91	130	122	90	101	112							97	95	94	88	92	104
CDC Normandy	93	88	92																		
CDC Valour	95	103	106																		
AC Watson	105	79	74							106	105	98									
Prairie Blue (FP 2024)	106	116	106	98	70	77	112	132	117							111	130	118	85	99	114
Taurus	91	82	90	109	96	95										107	108	98			
Vimy	102	110	106	96	66	67										99	76	76			
Solin																					
CDC Gold (SP 2100)	113	89	77	114	49	44	110	75	68	113	133	119	108	91	84	105	79	76	118	129	110
Linola™ 1084	125	124	97																		
Linola™ 2047 (SP 2047)	91	100	107	93	96	96	100	105	106	100	111	113	100	127	129	103	92	88	110	96	87
Linola 2090 (SP 2090)	104	98	93	94	88	80	106	65	61	102	101	100	102	85	83	100	139	138	96	98	102
Linola 2126				90	110	123				85	88	102	80	72	90	74	93	122			
Linola 2149										107	82	79									
Linola 2167										107	123	118									
Nulin 12(CR 12)													107	64	60						
SP 2149							105	109	103				117	141	120				114	124	109
SP 2167													103	136	131						
Field Average (%)	11.2%	38	345	17.8%	130	700	13.9%	83	600	20.8%	104	486	21.8%	383	1,754	17.4%	173	1,010	16.4%	32	194

Indexed on Field 100)

Area 2 - Dark Brown

	Regina						Scott									Watrous								
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
Raw Data	**2003**	**2003**	**2003**	**2005**	**2005**	**2005**	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**
CDC Arras	104	122	119				90	101	111	95	72	79				102	125	122	97	111	115			
CDC Bethune				91	73	82	90	105	117	97	77	81	99	105	106	100	115	114	104	140	134	92	103	108
AC Carnduff	81	102	125				102	108	106	99	96	90				100	89	89	91	48	53			
FP2102										99	94	91							99	80	82			
FP2107										103	128	131							110	87	79			
FP2112				106	140	131				107	89	85	104	102	99				89	93	100	103	86	84
FP2119				100	99	100				101	95	92	100	102	103				112	134	119	91	135	145
FP 2137				83	53	64							88	84	95							93	108	114
FP 2141				108	130	122							89	77	87							99	81	83
AC Hanley (FP 1094)	99	92	92				106	110	103	109	82	77				99	93	94	95	118	121			
AC Lightning (FP 1069)	74	76	102				94	104	111	93	148	148				88	89	101	105	87	84			
AC MacBeth (FP 1096)	88	94	101				99	91	93	93	99	108				94	104	110	95	74	74			
AC McDuff																								
CDC Mons (FP 2044)	87	101	115	91	132	143	82	76	93	103	96	97	108	79	74	96	98	102	88	109	124	87	78	93
CDC Normandy	104	102	98				94	59	62							93	86	94						
CDC Valour	108	95	86				100	70	70							97	99	102						
AC Watson	98	100	101				109	91	84							102	83	81						
Prairie Blue (FP 2024)	121	117	97	106	101	96	97	109	113	99	117	108	102	90	88	98	78	78	103	97	98	99	111	112
Taurus	98	104	106				100	112	112	97	110	108				101	107	106	99	94	98			
Vimy	100	103	104				100	83	83	105	64	60				99	102	103	101	109	109			
Solin																								
CDC Gold (SP 2100)	120	48	41	115	86	75	114	107	94	113	110	100				113	93	82	98	99	101	121	105	87
Linola™ 1084	130	176	135				115	132	115							114	110	97						
Linola™ 2047 (SP 2047)	95	99	104	95	102	109	102	134	131	99	117	119	105	105	99	99	110	111	107	104	99	98	105	104
Linola 2090 (SP 2090)	93	70	75	95	74	78	106	106	101	100	90	86	105	119	114	104	119	114	94	101	109	102	78	75
Linola 2126										87	118	139							112	111	101			
Linola 2149																								
Linola 2167																								
Nulin 12(CR 12)																								
SP 2149				109	110	102							110	117	108							116	109	94
SP 2167																								
Field Average (%)	8.6%	25	297	18.4%	81	437	14.3%	119	832	18.4%	259	1,405	14.8%	23	157	16.8%	169	1,009	17.2%	236	1,351	19.8%	225	1,124

Indexed on Field 100)	Area 3 - Black																				
	BATTLEFORD			Battleford			Canora									Indian Head					
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
	LV04T	LV04T	LV04T													LV04T	LV04T	LV04T	L05MT	L05MT	L05MT
Raw Data	2004	2004	2004	2004	2004	2004	2003	2003	2003	2004	2004	2004	2005	2005	2005	2004	2004	2004	2005	2005	2005
CDC Arras				98	76	80	98	124	126	95	76	80									
CDC Bethune	96	71	74	99	120	124	98	88	91	106	95	98	98	110	112	94	104	109	93	87	94
AC Carnduff				94	103	95	106	85	79	101	83	85									
FP2102				105	89	84				104	131	122									
FP2107				108	112	108				104	120	111									
FP2112				110	80	79				99	95	92	103	123	118						
FP2119				105	114	101				98	101	100	98	83	84						
FP 2137													96	117	122						
FP 2141													100	113	112						
AC Hanley (FP 1094)				106	98	94	107	127	118	109	100	96									
AC Lightning (FP 1069)				89	101	109	93	83	91	105	111	113									
AC MacBeth (FP 1096)	100	127	123	87	117	118	84	65	80	92	105	113				103	85	81	85	100	118
AC McDuff																					
CDC Mons (FP 2044)				106	86	96	90	99	107	99	98	105	95	89	94						
CDC Normandy							92	86	95												
CDC Valour							94	75	79												
AC Watson	93	80	89				103	93	90							101	87	85			
Prairie Blue (FP 2024)				89	113	118	105	109	107	99	114	104	103	108	104						
Taurus				101	125	116	101	101	101	100	101	99									
Vimy				97	77	77	97	92	95	102	97	96									
Solin																					
CDC Gold (SP 2100)	89	100	115	104	102	89	114	97	85	95	88	86	109	75	68	114	102	88	111	113	102
Linola™ 1084							116	140	122												
Linola™ 2047 (SP 2047)	109	105	98	101	106	113	99	107	109	102	101	104	95	103	111	104	133	127	84	87	101
Linola 2090 (SP 2090)	114	106	93	111	84	89	105	129	126	100	99	96	101	64	62	79	100	126	111	130	117
Linola 2126	103	126	122	90	97	109				90	84	100				95	73	81	98	104	106
Linola 2149	94	89	95													107	113	105			
Linola 2167	103	96	92													103	103	99			
Nulin 12(CR 12)																			116	91	79
SP 2149													102	114	111				111	104	92
SP 2167																			90	84	91
Field Average (%)	20.8%	118	564	18.4%	146	805	16.5%	154	934	18.4%	207	1,224	15.0%	139	930	20.8%	401	1,956	15.6%	255	1,628

Indexed on Field 100)

Area 3 - Black

	Indian Head									Lashburn			Melfort		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
Raw Data	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2004**	**2004**	**2004**	**2004**	**2004**	**2004**
CDC Arras	95	80	85	102	118	123				91	67	76	95	76	80
CDC Bethune	93	100	109	112	87	84	93	56	60	94	72	78	97	95	98
AC Carnduff	98	92	94	102	115	109				106	90	87	98	83	85
FP2102				106	130	133				103	88	87	108	131	122
FP2107				108	103	108				99	120	125	109	120	111
FP2112				100	83	97	99	78	78	104	83	82	104	95	92
FP2119				96	138	126	103	125	120	102	89	89	102	101	100
FP 2137							95	90	94						
FP 2141							92	98	106						
AC Hanley (FP 1094)	107	101	94	104	110	100				106	77	74	104	100	96
AC Lightning (FP 1069)	88	75	85	103	88	89				99	139	142	99	111	113
AC MacBeth (FP 1096)	87	85	95	95	104	101				89	92	104	93	105	113
AC McDuff															
CDC Mons (FP 2044)	98	122	125	95	106	94	88	126	146	100	90	93	93	98	105
CDC Normandy	89	76	85												
CDC Valour	92	76	83												
AC Watson	111	100	91												
Prairie Blue (FP 2024)	108	125	116	103	132	117	100	66	66	109	110	104	110	114	104
Taurus	106	141	135	113	79	94				103	103	104	103	101	99
Vimy	102	94	93	98	104	109				106	60	58	101	97	96
Solin															
CDC Gold (SP 2100)	103	114	111	100	55	65	119	89	74	106	103	96	102	88	86
Linola™ 1084	118	139	120												
Linola™ 2047 (SP 2047)	95	100	106	91	67	68	94	88	93	97	110	115	97	101	104
Linola 2090 (SP 2090)	110	80	73	96	77	84	108	149	139	104	84	83	103	99	96
Linola 2126				75	106	98				84	110	133	84	84	100
Linola 2149											165	140			
Linola 2167											150	132			
Nulin 12(CR 12)															
SP 2149							107	117	109						
SP 2167															
Field Average (%)	12.5%	127	1,011	16.3%	692	3,457	18.0%	85	476	18.5%	276	1,464	16.9%	207	1,224

Indexed on Field 100)	Area 4 - Moist Black														
	Kelvington						Kelvington						Valparaiso		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
	LV04T	LV04T	LV04T	L05MT	L05MT	L05MT									
Raw Data	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2003**	**2003**	**2003**	**2005**	**2005**	**2005**	**2005**	**2005**	**2005**
CDC Arras							108	93	89						
CDC Bethune	97	109	115	89	88	100	108	73	70	89	73	86	103	93	88
AC Carnduff							111	112	96						
FP2102															
FP2107															
FP2112										95	99	102	110	102	91
FP2119										107	104	99	106	104	98
FP 2137										101	101	102	91	100	109
FP 2141										114	136	120	108	142	131
AC Hanley (FP 1094)							101	182	181						
AC Lightning (FP 1069)							77	98	103						
AC MacBeth (FP 1096)	94	106	113	86	90	105	96	65	74						
AC McDuff															
CDC Mons (FP 2044)							59	75	89	96	112	118	93	98	107
CDC Normandy							114	115	111						
CDC Valour							108	60	61						
AC Watson	95	82	87				99	71	71						
Prairie Blue (FP 2024)							105	201	196	103	115	110	90	89	99
Taurus							94	141	150						
Vimy							107	121	119						
Solin															
CDC Gold (SP 2100)	111	110	98	116	91	79	105	75	72	102	77	77	111	81	73
Linola™ 1084							105	61	61						
Linola™ 2047 (SP 2047)	96	88	92	100	109	110	100	25	26	110	108	99	83	97	115
Linola 2090 (SP 2090)	94	85	88	95	78	82	102	132	131	97	100	102	105	95	92
Linola 2126	95	98	104	70	65	93									
Linola 2149	104	104	100												
Linola 2167	113	117	103												
Nulin 12(CR 12)				118	128	110									
SP 2149				122	147	121				88	74	86	100	99	98
SP 2167				104	105	102									
Field Average (%)	20.8%	120	578	21.6%	220	1,014	11.5%	53	451	22.1%	247	1,117	21.2%	179	852

Indexed on Field Average (Field Average = 100)	Irrigation														
	Outlook - CSIDC									Outlook - Howarden			Outlook - Knapik		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
Raw Data	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**
CDC Arras	97	102	106							102	124	124	94	73	75
CDC Bethune	90	81	91				103	99	97	107	134	128	102	116	116
AC Carnduff	119	118	100	95	83	88				99	92	94	89	91	104
FP2102													116	96	84
FP2107													111	155	146
FP2112							99	87	86				109	100	93
FP2119							105	96	91				94	87	95
FP 2137							99	110	112						
FP 2141							84	92	109						
AC Hanley (FP 1094)	102	99	97	112	122	110				105	115	110	101	64	63
AC Lightning (FP 106	103	97	95							100	108	110	95	102	107
AC MacBeth (FP 109	106	101	97	99	142	144				98	107	111	98	102	106
AC McDuff													92	63	69
CDC Mons (FP 2044)	93	120	129				88	88	100	98	77	81	100	99	99
CDC Normandy	79	61	78							83	54	66			
CDC Valour	69	70	100							83	84	104			
AC Watson	99	83	84							101	93	94			
Prairie Blue (FP 2024)	110	105	96	81	72	88	106	103	97	117	161	140	107	120	118
Taurus	114	132	118							111	146	135	108	168	154
Vimy	91	102	115							76	31	41	84	60	69
Solin															
CDC Gold (SP 2100)	107	86	82	96	98	100	112	122	109	93	59	64	102	103	99
Linola™ 1084	128	173	136	112	102	91				119	93	81	116	112	98
Linola™ 2047 (SP 20	94	69	75	108	83	77	94	94	99	103	125	124	90	92	101
Linola 2090 (SP 2090	100	100	102	93	99	106	93	90	97	106	96	93	109	121	111
Linola 2126				105	99	95							83	76	93
Linola 2149															
Linola 2167															
Nulin 12(CR 12)															
SP 2149							112	118	106						
SP 2167															
Field Average (%)	14.5%	117	797	16.2%	162	997	17.7%	46	259	16.2%	142	857	19.7%	701	3,489

Indexed on Field Average (Field Average = 100)	Irrigation											
	Outlook - Pederson									Outlook - Welterman		
	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield	Fiber Content (%)	Fiber Yield (kg/ha)	Salvageable Straw Yield (kg/ha)
Raw Data	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2005**	**2005**	**2005**
CDC Arras	98	85	87									
CDC Bethune	97	81	84				98	96	99	101	115	114
AC Carnduff	106	106	101	104	60	60						
FP2102				91	60	69						
FP2107												
FP2112							99	104	105	100	85	86
FP2119							109	83	77	101	96	97
FP 2137							94	100	107	102	95	93
FP 2141							109	124	113	89	93	105
AC Hanley (FP 1094)	107	127	119									
AC Lightning (FP 106	89	100	113									
AC MacBeth (FP 109	89	75	84									
AC McDuff												
CDC Mons (FP 2044)	93	112	122	82	32	41	97	106	109	95	102	107
CDC Normandy	96	109	113									
CDC Valour	89	73	83									
AC Watson	112	88	79									
Prairie Blue (FP 2024)	109	129	119				106	111	105	104	120	115
Taurus	110	143	132									
Vimy	95	65	69									
Solin												
CDC Gold (SP 2100)	100	86	87	88	141	169	98	100	102	102	74	72
Linola™ 1084	118	138	118									
Linola™ 2047 (SP 20	91	92	102				89	92	104	103	105	102
Linola 2090 (SP 2090	99	88	90				100	83	83	89	88	100
Linola 2126				136	208	161						
Linola 2149												
Linola 2167												
Nulin 12(CR 12)												
SP 2149							101	98	97	111	115	103
SP 2167												
Field Average (%)	15.5%	121	778	13.9%	202	1,380	16.1%	42	263	14.8%	31	209

The four sites with the highest average salvageable straw yields were Indian Head - Agricore United Site (1,956 kg/ha), Lashburn (1,405 kg/ha), Outlook-Pederson (1,380 kg/ha), and Watrous (1,351 kg/ha), while the four lowest average salvageable straw yields were found at Kelvington - Agricore United Site (578 kg/ha), North Battleford - Agricore United Site (564 kg/ha), Saskatoon - Agricore United Site (486 kg/ha), Scott (432 kg/ha). The four sites with the highest average salvageable straw yields had an average salvageable straw yield that was 3.0 times greater than the average salvageable straw yield of the four sites with the lowest average salvageable straw yield. The salvageable straw yield of the highest average salvageable straw yield location (Indian Head - Agricore United Site) was four times the lowest average salvageable straw yield location (Scott) (see Table 1). Salvageable Straw yields of hand harvested trials at Indian Head and Outlook-Knapik were 4,182 kg/ha and 3,489 kg/ha.

The four sites with the highest average fiber content were Kelvington(2005) (22.1%), Saskatoon(2005) – Agricore United Site (21.8%), Kelvington(2005) - Agricore United Site (21.6%), and Valparaiso(2005) - Agricore United Site (21.2%) while the four lowest average fiber content were found at Indian Head(2003) (12.5%), Kelvington(2003) (11.5%), Kernen(2003) (11.2%), and Regina(2003) (8.6%). The four sites with the highest average fiber content had an average fiber content that was 2.6 times greater than the average fiber content of the four sites with the lowest average salvageable straw yields. The fiber content of the highest average fiber content location (Kelvington(2005)) was over two and a half times the lowest average fiber content location (Regina(2003)) (see Table 1).

The four locations with the highest average fiber yield Indian Head(2004) – Agricore United Site (401 kg/ha), Saskatoon(2004) - Agricore United Site (383 kg/ha), Lashburn(2004) (276 kg/ha), Scott (2004) (259 kg/ha), while the lowest average fiber yields were found at Redvers(2005) (32 kg/ha), Outlook-Weiterman(2005) (31 kg/ha), Regina(2003) (25 kg/ha), Scott(2005) (23 kg/ha). The four sites with the highest average fiber yield had an average fiber yield that was 11.8 times greater than the fiber yield at the four sites with the lowest average fiber yield. The average fiber yield of the highest average fiber yield location (Indian Head(2004) - Agricore United Site) was over seventeen and a half times greater than at the lowest average fiber yield location (Scott(2005)) (see Table 1). Average fiber yields of hand harvested trials were at Outlook-Knapik(2004) (701 kg/ha), and at Indian Head(2004) (692 kg/ha).

The minimum level generally considered profitable for processing for fiber use with the current economic conditions is 15% fiber content. There were varieties at certain locations that would not be useful for processing. The varieties denoted in Table 4 were less than 15% fiber content at the corresponding locations.

The reader should note that these results are positive. In other research work recently completed by Biolin Research, it was found that the bast fiber content in baled straw is, on the average, about 5% higher than in the standing straw that was cut and used to make the bales. This apparent increase in fiber content is due to the fact that non-fiber parts of the stem often break off and fall out of the bale chamber as baling takes place due to the vigorous mechanical action of the baler. Thus if a processor needs about 15% bast fiber to breakeven in his processing operation, bast fiber contents in standing straw of 10% or more should give him bales with a bast fiber content of roughly 15%.

Table 4 - 2003 to 2005 Fiber Contents Profitable for Textile Processing

	Area 2 - Dark Brown																Area 3 - Black											
	Kernen			Saskatoon		Redvers		Regina		Scott			Watrous			Battleford	Battleford	Canora			Indian Head		Indian Head			Leask burn	Melfort	
				LV04T	L05MT											LV04T					LV04T	L05MT						
Raw Data	2003	2004	2005	2004	2005	2004	2005	2003	2005	2003	2004	2005	2003	2004	2005	2004	2004	2003	2004	2005	2004	2005	2003	2004	2005	2004	2004
CDC Arras	9.3%	17.2%				16.6%		9.0%		12.9%	17.5%		17.1%	16.7%			18.0%	16.2%	17.4%				11.9%	16.6%		16.8%	16.0%
CDC Bethune	10.0%	17.4%	12.7%	19.6%	21.0%	17.7%	13.6%		16.7%	12.9%	17.9%	14.6%	16.8%	17.8%	18.3%	19.9%	18.2%	16.2%	19.6%	14.7%	19.6%	14.6%	11.7%	18.2%	16.7%	17.3%	16.4%
AC Camduff	12.2%	18.2%				16.4%		7.0%		14.6%	18.3%		16.7%	15.7%			17.2%	17.6%	18.5%				12.2%	16.7%		19.5%	16.5%
FP2102		19.0%				17.8%					18.2%			17.1%			19.3%		19.1%					17.2%		18.9%	18.2%
FP2107		17.8%				20.1%					19.0%			18.9%			19.9%		19.2%					17.6%		18.2%	18.3%
FP2112		18.2%	14.0%			18.0%	16.9%		19.5%		19.6%	15.3%		15.4%	20.3%		20.3%		18.1%	15.4%				16.2%	17.8%	19.2%	17.6%
FP2119		19.6%	13.2%			16.9%	18.5%		18.4%		18.5%	14.8%		19.3%	18.0%		19.3%		18.0%	14.7%				15.7%	18.6%	18.8%	17.2%
FP 2137			12.3%				15.1%		15.2%			13.0%			18.4%					14.4%					17.1%		
FP 2141			14.0%				16.2%		19.8%			13.1%			19.6%					14.9%					16.6%		
AC Hanley (FP 1094)	12.3%	18.8%				20.0%		8.5%		15.2%	20.0%		16.7%	16.3%			19.4%	17.6%	20.0%				13.4%	17.0%		19.5%	17.6%
AC Lightning (FP 1069)	9.7%	16.3%				14.9%		6.4%		13.5%	17.2%		14.8%	18.1%			16.4%	15.3%	19.3%				11.0%	16.8%		18.2%	16.7%
AC MacBeth (FP 1096)	9.6%	17.8%		17.9%	18.8%	16.8%		7.6%		14.2%	17.1%		15.8%	16.3%		20.9%	16.1%	13.8%	16.8%		21.5%	13.2%	10.9%	15.4%		16.5%	15.7%
AC McDuff																											
CDC Mons (FP 2044)	10.6%	16.3%	12.6%			16.9%	14.4%	7.5%	16.7%	11.8%	19.0%	15.9%	16.1%	15.1%	17.1%		19.6%	14.9%	18.2%	14.1%			12.2%	15.4%	15.8%	18.5%	15.7%
CDC Normandy	10.4%							9.0%		13.6%			15.5%					15.1%					11.1%				
CDC Valour	10.7%							9.3%		14.3%			16.3%					15.5%					11.5%				
AC Watson	11.8%			22.1%				8.4%		15.6%			17.1%			19.4%		17.0%			21.0%		13.9%				
Prairie Blue (FP 2024)	11.9%	17.4%	15.5%			19.4%	14.0%	10.4%	19.5%	14.0%	18.2%	15.1%	16.4%	17.7%	19.7%		16.3%	17.3%	18.2%	15.4%			13.4%	16.7%	18.1%	20.2%	18.6%
Taurus	10.2%	19.5%				18.7%		8.4%		14.3%	17.8%		16.9%	17.0%			18.6%	16.6%	18.3%				13.2%	18.4%		19.0%	17.3%
Vimy	11.4%	17.1%				17.3%		8.6%		14.4%	19.2%		16.7%	17.3%			17.8%	16.0%	18.7%				12.7%	16.0%		19.6%	17.1%
Solin																											
CDC Gold (SP 2100)	12.6%	20.2%	15.3%	23.6%	23.5%	18.3%	19.4%	10.3%	21.2%	16.3%	20.8%		19.0%	16.8%	23.9%	18.6%	19.1%	18.8%	17.5%	16.3%	23.7%	17.3%	12.8%	16.4%	21.4%	19.6%	17.3%
Linola™ 1084	14.0%							11.2%		16.5%			19.1%					19.2%					14.7%				
Linola™ 2047 (SP 2047)	10.2%	16.6%	13.9%	20.9%	21.7%	18.0%	18.0%	8.2%	17.5%	14.6%	18.3%	15.5%	16.6%	18.4%	19.4%	22.6%	18.5%	16.3%	18.7%	14.2%	21.8%	13.0%	11.8%	14.9%	16.8%	18.0%	16.4%
Linola 2090 (SP 2090)	11.7%	16.8%	14.7%	21.4%	22.3%	17.5%	15.7%	8.1%	17.4%	15.2%	18.3%	15.5%	17.5%	16.2%	20.3%	23.7%	20.3%	17.4%	18.4%	15.2%	16.4%	17.4%	13.7%	15.6%	19.4%	19.1%	17.4%
Linola 2126		16.0%		17.7%	17.4%	12.9%					15.9%			19.3%		21.5%	16.6%		16.6%		19.9%	15.4%		12.2%		15.6%	14.2%
Linola 2149				22.3%												19.6%					22.2%						
Linola 2167				22.2%												21.5%					21.5%						
Nulin 12(CR 12)					23.4%																	18.1%					
SP 2149			14.5%		25.6%		18.6%		20.0%			16.3%			23.0%					15.2%		17.3%			19.3%		
SP 2167					22.4%																	14.1%					
Field Average (%)	11.2%	17.8%	13.9%	20.8%	21.8%	17.4%	16.4%	8.6%	18.4%	14.3%	18.4%	14.8%	16.8%	17.2%	19.8%	20.8%	18.4%	16.5%	18.4%	15.0%	20.8%	15.6%	12.5%	16.3%	18.0%	18.5%	16.9%
LSD	2.0%	3.7%	2.0%	5.1%	2.2%	2.3%	2.8%	1.9%	1.8%	1.3%	1.3%	2.6%	1.3%	4.4%	5.2%	5.7%	2.5%	2.6%	3.2%	1.4%	5.1%	2.8%	1.8%	1.7%	1.9%	1.9%	1.8%
c.v.	14.0%	12.0%	10.1%	14.3%	11.8%	11.5%	14.3%	16.6%	10.5%	9.4%	7.0%	10.3%	7.4%	14.2%	15.7%	14.3%	9.9%	11.1%	9.6%	5.9%	14.3%	14.5%	11.2%	9.8%	9.8%	8.3%	8.2%

NOTES:

Denotes generally not profitable for textile processing

LV04T & L05MT denotes grown in Agricore United Private Trials

Field averages are the average of all varieties at that location, expressed in

Fiber Content is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Table 4 - 2003 to 2005 Fiber Contents Profitable for Textile Processing

	Area 2 - Dark Brown																Area 3 - Black											
	Kernen			Saskatoon		Redvers		Regina		Scott			Watrous			Battleford	Battleford	Canora			Indian Head		Indian Head			Lashburn	Melfort
				LV041	L05M1											LV041					LV041	L05M1						
Raw Data	2003	2004	2005	2004	2005	2004	2005	2003	2005	2003	2004	2005	2003	2004	2005	2004	2004	2003	2004	2005	2004	2005	2003	2004	2005	2004	2004
CDC Arras	9.3%	17.2%				16.6%		9.0%		12.9%	17.5%		17.1%	16.7%			18.0%	16.2%	17.4%				11.9%	16.6%		16.8%	16.0%
CDC Bethune	10.0%	17.4%	12.7%	19.6%	21.0%	17.7%	13.6%		16.7%	12.9%	17.9%	14.6%	16.8%	17.8%	18.3%	19.9%	18.2%	16.2%	19.6%	14.7%	19.6%	14.6%	11.7%	18.2%	16.7%	17.3%	16.4%
AC Camduff	12.2%	18.2%				16.4%		7.0%		14.6%	18.3%		16.7%	15.7%			17.2%	17.6%	18.5%				12.2%	16.7%		19.5%	16.5%
FP 2102		19.0%				17.8%					18.2%			17.1%			19.3%		19.1%					17.2%		15.9%	18.2%
FP 2107		17.8%				20.1%					19.0%			18.9%			19.9%		19.2%					17.6%		18.2%	18.3%
FP 2112		18.2%	14.0%			18.0%	16.9%		19.5%		19.6%	15.3%		15.4%	20.3%		20.3%		18.1%	15.4%				16.2%	17.8%	19.2%	17.6%
FP 2116		19.6%	13.2%			16.9%	18.5%		18.4%		18.5%	14.8%		19.3%	18.0%		19.3%		18.0%	14.7%				18.7%	18.0%	18.8%	17.2%
FP 2137			12.3%				15.1%		15.2%			13.0%			18.4%					14.4%					17.1%		
FP 2141			14.0%				16.2%		19.8%			13.1%			19.6%					14.9%					16.6%		
AC Hanley (FP 1004)	12.3%	18.6%				20.0%		5.5%		15.2	20.0%		16.7%	16.3%			19.4	17.6%	20.0%				13.4%	17.0%		19.5%	17.6%
AC Lightning (FP 1059)	9.7%	16.3				14.9%		6.4%		13.5%	17.2		14.8%	18.1			16.4	15.3%	19.3%				11.0%	16.8%		18.2	16.2
AC MacBeth (FP 1056)	9.6%	17.8		17.9%	18.6%	16.8		7.6%		14.2%	17.1%		15.8%	16.3%		20.9%	16.1	13.8%	16.8%		21.5%	13.2%	10.9%	15.4%		16.5%	15.7
AC McDuff																											
CDC Mons (FP 2044)	10.6%	16.3%	12.6%			16.9	14.4%	7.5%	16.7%	11.8%	19.0%	15.9%	16.1%	15.1%	17.1%		19.6%	14.9%	18.2%	14.1%			12.2%	15.4%	15.8%	18.5%	16.1
CDC Normandy	10.4%							9.0%		13.6%			15.5%					15.1					11.1%				
CDC Valour	10.7%							9.3%		14.3%			16.3					15.5					11.5%				
AC Watson	11.8%			22.1%				8.4%		15.6%			17.1			19.4%		17.0			21.0%		13.9%				
Prairie Blue (FP 2024)	11.9%	17.4	15.5			19.4	14.0%	10.4%	19.5%	14.0%	18.2	15.1%	15.4	17.7	19.7%		16.3	17.3%	18.2	15.4			13.4%	16.7%	18.1%	20.2	18.6
Taurus	10.2%	19.5				18.7		8.4%		14.3%	17.8		16.9	17.0			18.6	16.6	18.3				13.2%	18.4		19.0	17.3
Vimy	11.4%	17.1				17.3		8.6%		14.4%	19.2		16.7	17.3			17.8	16.0	18.7				12.7%	16.0%		19.6	17.1
Solin																											
CDC Gold (SP 2100)	12.6%	20.2	15.3	23.6%	23.5	18.3%	19.4	10.3%	21.2%	16.3	20.8		19.0	16.8	23.9%	18.6	19.1	18.6	17.5	16.3	23.7	17.3	12.8%	19.4	21.4	19.6	17.3
Linola™ 1084	14.0%							11.2%		19.5%			19.1%					19.2%					14.7%				
Linola™ 2047 (SP 2047)	10.2%	16.6	13.9%	20.5%	21.7	18.0%	18.0%	8.2%	17.6	14.6%	18.3	15.6%	16.6	18.4	19.4	22.6	18.6	16.3	18.7	14.2%	21.8%	13.0%	11.8%	14.9%	16.8	18.0%	16.4
Linola 2090 (SP 2090)	11.7%	16.9	14.7%	21.4%	22.3	17.5%	19.7	8.1%	17.4	15.2%	18.3	15.5	17.5%	16.2%	20.3%	23.7	20.3	17.4	18.4	15.2	16.4	17.4	13.7%	15.6%	19.4	19.1%	17.4
Linola 2126		16.0		17.7%	17.4	12.9%					15.9			19.3		21.6	16.6		16.6		19.9	15.4		12.2%		15.6	14.2%
Linola 2149				22.3%												19.6%					22.2%						
Linola 2167				22.2												21.5					21.5						
Nuto 12(GR 12)					23.4																	18.1					
SP 2149			14.5%		25.5		18.6%		20.0%			16.3			23.0					15.2		17.3%			19.3		
SP 2167					22.4																	14.1%					
Field Average (%)	11.2%	17.8	13.9%	20.8%	21.8%	17.4	16.4	8.6%	18.4	14.3%	18.4	14.6%	16.8	17.2	19.8	20.8	18.4	16.5%	18.4%	15.0%	20.8%	15.6%	12.5%	16.3%	18.0%	18.5%	16.9%
LSD	2.0	3.7	2.8	5.1	2.2	2.3%	2.8%	1.9%	1.8%	1.3%	1.3	2.6	1.3%	4.4%	5.2	5.7	2.5	2.6	3.2	1.4	5.1%	2.8%	1.8%	1.7%	1.9%	1.9%	1.8
C.V.	14.0	12.6	10.1	14.3%	11.8%	11.6	14.3	16.0%	10.5	9.4	7.0	10.3	7.4%	14.2	15.7	14.3%	9.9	11.1	9.6%	5.9%	14.3%	14.5%	11.2%	9.8%	9.8%	8.3%	8.2

NOTES:

Varieties generally not profitable for textile processing

LSD(.05) & (05M1) denotes groups in Agricore United Private Trials

Field averages are the average of all

varieties at that location represented in

Lower Quartile - the percent of fiber expressed as a percentage within the MIR scattered sample

	Area 4 - Moist Black					Irrigation								
	Kelvington		Kelvington		Valparaiso	Outlook - CSIDC			Outlook - Howarden	Outlook - Knapik	Outlook - Pederson			Outlook - Welterman
	LV04T	L05MT												
Raw Data	**2004**	**2005**	**2003**	**2005**	**2005**	**2003**	**2004**	**2005**	**2003**	**2004**	**2003**	**2004**	**2005**	**2005**
CDC Arras			12.4%			14.0%			16.4%	18.5%	15.3%			
CDC Bethune	20.3%	19.2%	12.4%	19.5%	21.9%	13.0%		18.1%	17.2%	20.0%	15.1%		15.8%	14.9%
AC Carnduff			12.8%			17.3%	15.4%		16.0%	17.5%	16.5%	14.5%		
FP2102										22.8%		12.7%		
FP2107										21.9%				
FP2112				20.9%	23.4%			17.5%		21.4%			15.9%	14.9%
FP2119				23.7%	22.6%			18.6%		18.5%			17.5%	14.9%
FP 2137				22.3%	19.3%			17.4%					15.1%	15.1%
FP 2141				25.1%	22.8%			14.9%					17.5%	13.2%
AC Hanley (FP 1094)			11.6%			14.8%	18.2%		16.9%	20.0%	16.7%			
AC Lightning (FP 1069)			8.9%			15.0%			16.2%	18.8%	13.9%			
AC MacBeth (FP 1096)	19.7%	18.5%	11.0%			15.4%	16.0%		15.8%	19.3%	13.8%			
AC McDuff										18.1%				
CDC Mons (FP 2044)			6.8%	21.1%	19.7%	13.5%		15.6%	15.8%	19.7%	14.4%	11.4%	15.6%	14.1%
CDC Normandy			13.0%			11.5%			13.4%		15.0%			
CDC Valour			12.4%			10.1%			13.4%		13.9%			
AC Watson	19.9%		11.4%			14.4%			16.4%		17.4%			
Prairie Blue (FP 2024)			12.0%	22.6%	19.1%	15.9%	13.1%	18.8%	18.9%	21.1%	16.9%		17.1%	15.4%
Taurus			10.8%			16.5%			17.9%	21.3%	17.1%			
Vimy			12.3%			13.2%			12.3%	16.6%	14.8%			
Solin														
CDC Gold (SP 2100)	23.2%	25.1%	12.1%	22.5%	23.4%	15.5%	15.5%	19.8%	15.1%	20.1%	15.5%	12.2%	15.8%	15.2%
Linola™ 1084			12.1%			18.6%	18.1%		19.2%	22.8%	18.3%			
Linola™ 2047 (SP 2047)	20.0%	21.6%	11.5%	24.2%	17.6%	13.7%	17.5%	16.7%	16.7%	17.7%	14.2%		14.2%	15.3%
Linola 2090 (SP 2090)	19.6%	20.6%	11.7%	21.3%	22.2%	14.5%	15.1%	16.4%	17.1%	21.5%	15.4%		16.0%	13.2%
Linola 2126	19.7%	15.2%					17.0%			16.2%		18.9%		
Linola 2149	21.6%													
Linola 2167	23.6%													
Nulin 12(CR 12)		25.5%												
SP 2149		26.3%		19.5%	21.3%			19.7%					16.2%	16.4%
SP 2167		22.4%												
Field Average (%)	20.8%	21.6%	11.5%	22.1%	21.2%	14.5%	16.2%	17.7%	16.2%	19.7%	15.5%	13.9%	16.1%	14.8%
LSD	5.8%	2.0%	2.9%	6.8%	6.4%	2.8%	5.9%	2.7%	1.9%	4.9%	1.3%	0.3%	3.1%	2.1%
c.v.	14.3%	16.8%	11.9%	16.0%	16.5%	16.5%	15.7%	11.0%	11.2%	15.4%	9.4%	27.5%	10.6%	8.9%

NOTES:

Denotes generally not profitable for textile processing

LV04T & L05MT denotes grown in Agricore United Private Trials

Field averages are the average of all varieties at that location, expressed in actual

Fiber Content is the amount of fiber, expressed as a percentage, within the NIR scanned sample

	Area 4 - Moist Black					Irrigation								
	Kelvington		Kelvington		Valparaiso	Outlook - CSIDC			Outlook - Howarden	Outlook - Knapik	Outlook - Pederson			Outlook - Wetterman
	LV04T	L05MT												
Raw Data	2004	2005	2003	2005	2005	2003	2004	2005	2003	2004	2003	2004	2005	2005
CDC Arras			12.4%			14.0%			16.4%	18.5%	15.3%			
CDC Bethune	20.3%	19.2%	12.4%	19.5%	21.9%	13.0%		18.1%	17.2%	20.0%	15.1%		15.8%	14.9%
AC Cannduff			12.8%			17.3%	15.4%		15.0%	17.5%	16.5%	14.5%		
FP2102										22.8%		12.7%		
FP2107										21.9%				
FP2112				20.9%	23.4%			17.5%		21.4%			15.9%	14.9%
FP2119				23.7%	22.6%			18.6%		18.5%			17.8%	14.9%
FP 2137				22.3%	19.3%			17.4					15.1%	15.1%
FP 2141				25.1%	22.8%			14.9%					17.5%	13.2%
AC Hanley (FP 1094)			11.5%			14.8%	18.2%		16.9%	20.0%	16.7%			
AC Lightning (FP 1059)			8.9%			15.0			16.2%	16.8%	13.9%			
AC MacBeth (FP 1098)	19.7%	18.6%	11.0%			15.4	16.0%		15.8%	19.3%	13.8%			
AC McDuff										18.1%				
CDC Mons (FP 2044)			6.8%	21.1%	19.1%	13.5%		16.6%	15.8%	19.7%	14.4%	11.4%	15.6%	14.1%
CDC Normandy			13.0%			11.5%			13.4%		15.0%			
CDC Valour			12.4%			10.1%			13.4%		13.9%			
AC Watson	19.9%		11.4%			14.4%			16.4%		17.4			
Prairie Blue (FP 2024)			12.0%	22.6%	19.1%	15.9%	13.1%	18.8%	18.9%	21.1%	16.9%		17.1%	15.4%
Taurus			10.8%			16.6			17.9%	21.3%	17.1%			
Vimy			12.3%			13.2%			12.3%	16.6%	14.8%			
Solin														
CDC Gold (SP 2100)	23.2%	25.1%	12.1%	27.5%	23.4%	15.5%	16.5%	19.8%	15.1%	20.1%	15.5%	12.2%	15.8%	15.2%
Linola™ 1084			12.1%			16.6	18.1%		19.2%	22.8	18.3%			
Linola™ 2047 (SP 2047)	20.0%	21.6%	11.5%	24.2%	17.6%	13.7%	17.5%	16.7%	16.1%	17.7%	14.2%		14.2%	15.3%
Linola 2090 (SP 2090)	19.6	20.6%	11.7%	21.3%	22.2%	14.5%	15.1%	16.4%	17.1%	21.5%	15.4		16.0%	13.2%
Linola 2126	19.7%	16.2					17.0%			16.2		18.9		
Linola 2149	21.6%													
Linola 2167	23.6%													
Nulin 12(CR 12)		25.6												
SP 2149		26.3%		19.5%	21.3%			19.7%					16.2%	16.4
SP 2167		22.4%												
Field Average (%)	20.8%	21.6%	11.5%	22.1%	21.2%	14.5%	16.2%	17.7%	16.2%	19.7%	15.5%	13.9%	16.1%	14.8%
LSD	5.8%	2.0%	2.9%	0.6%	5.4%	2.8%	5.9%	2.7%	1.9%	4.9%	1.3%	0.3%	3.1%	2.1%
c.v.	14.3%	16.8%	11.9%	16.0%	18.5%	16.5%	15.7%	11.0%	11.2%	15.4%	9.4%	27.5%	19.6%	8.9%

NOTES:

Denotes generally not profitable for textile processing

LV04T & L05MT denotes grown in Agriculture United Private Trials

Field averages are the average of all varieties at that location, expressed in actual

Fiber Content is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Regression Results

For the purpose of this report, regression equation results were used for analysis. A L.S.D. calculation table has been represented in Table 1, but will not be discussed in detail in this report.

The regression equations that showed significant differences are located in Appendix B, the following explains the results from these regressions. The R-Squared tells you how much your ability to predict is improved by using the regression line, compared with not using it. The adjusted R-squared reduces the R-squared by how much fit would probably happen just by luck when more explanatory variables are added.

Salvageable Straw lengths (standing straw heights after seed has been harvested) from 2003, 2004 and 2005 were significantly higher than Saskatoon at Valparaiso (+9.8 cm), Indian Head (+8.1 cm), Melfort (+7.21 cm), North Battleford (+5.4 cm), Redvers (+4.7 cm), Kelvington (+4.5 cm), Canora (+3.5 cm), Outlook (+2.2 cm), and significantly lower at Regina (-6.0 cm) with an adjusted r^2 of 0.21 (Equation B-1).

In comparing the locations from 2003, 2004 and 2005, fiber contents were significantly higher than Saskatoon at Valparaiso (+4.8%), North Battleford (+2.8%), Kelvington (+2.4%), Lashburn (+2.1%), Watrous (+1.3%), and significantly lower at Regina (-2.6%) with an adjusted r^2 of 0.13 (Equation B-2).

Salvageable straw yields from 2003, 2004, and 2205 were significantly higher than Saskatoon in Indian Head (+1,290 kg/ha), Lashburn (+663 kg/ha), Melfort (+482 kg/ha), Watrous (+432 kg/ha), Outlook (+388 kg/ha), Canora (+ 305kg/ha), and significantly lower at Regina (-371 kg/ha) %) with an adjusted r^2 of 0.21 (Equation B-3).

Fiber yields from 2003, 2004, and 2205 were significantly higher than Saskatoon in Indian Head (+197 kg/ha), Lashburn (+123 kg/ha), Watrous (+74 kg/ha), Melfort (+72 kg/ha), Outlook (+68 kg/ha), Canora (+ 44kg/ha), and significantly lower at Scott (-48 kg/ha), and Regina (-80 kg/ha) %) with an adjusted r^2 of 0.15 (Equation B-4).

When looking at linseed named varieties, cut straw lengths were significantly lower than Vimy in CDC Normandy (-3.6 cm), and CDC Valour (-3.9 cm) with an adjusted r^2 of 0.01 (Equation B-5).

In named linseed varieties, fiber contents were significantly higher than Vimy in Prairie Blue (+1.2%), and significantly lower in CDC Normandy (-3.0%), and CDC Valour (-3.1%) with an adjusted r^2 of 0.03 (Equation B-6).

Salvageable straw yields of named linseed varieties were significantly lower than Vimy in AC Watson (-420 kg/ha), CDC Normandy (-483 kg/ha) and CDC Valour (-492 kg/ha) with an adjusted r^2 of 0.02 (Equation B-7).

Fiber yields of named linseed varieties were significantly lower than Vimy in CDC Normandy (-99 kg/ha) and CDC Valour (-101 kg/ha) with an adjusted r^2 of 0.02 (Equation B-8).

Cut straw lengths of named solin varieties were significantly lower than Vimy in Linola 2090 (-2.5 cm), Linola 1084 (-4.3 kg/ha), and Nulin 12(CR 12) (-6.1 cm) with an adjusted r^2 of 0.06 (Equation B-9).

Fiber contents of named varieties were significantly higher than Vimy in Bulin 12(CR 12) (+6.5%), Linola 2167 (+6.4%), Linola 2149 (+5.6%), CDC Gold (+2.7%), Linola 2090 (+1.6%), and Linola 2047 (+1.2%) with an adjusted r^2 of 0.14 (Equation B-10).

Cut Straw lengths of unnamed varieties were significantly higher than Vimy in FP 2107 (+4.5 cm), FP 2102 (+3.5 cm), and significantly less in FP 2141 (-4.6 cm), SP 2149 (-4.7 cm), and FP 2137 (-5.9 cm) with an adjusted r^2 of 0.15 (Equation B-11).

Fiber contents of unnamed varieties were significantly higher than Vimy in SP 2167 (+3.8%), SP 2149 (+3.5%), FP 2107 (+3.3%), FP 2102 (+2.7%), FP 2112 (+2.2%), FP 2119 (+2.2%), and FP 2141 (+1.8%) with an adjusted r^2 of 0.11 (Equation B-12).

Salvageable straw yields of unnamed varieties were significantly higher than Vimy in FP 2107 (+652 kg/ha) and significantly lower in FP 2141 (-480 kg/ha) and FP 2137 (-572 kg/ha) with an adjusted r^2 of 0.09 (Equation B-13).

Fiber yields of unnamed varieties were significantly higher than Vimy in FP 2107 (+160 kg/ha), FP 2167 (+136 kg/ha), and FP 2102 (+106 kg/ha) and significantly lower in FP 2137 (-88 kg/ha) with an adjusted r^2 of 0.10 (Equation B-14).

Cut straw lengths of Soil zone areas were significantly higher than the Irrigation zone in Soil zone 4 (+3.4 cm), Soil zone 3 (+2.6 cm), and significantly lower in Soil zone 2 (-2.2 cm) with an adjusted r^2 of 0.09 (Equation B-15).

Fiber contents of Soil zone areas were significantly higher than the Irrigation zone in Soil zone 4 (+3.0%) and Soil zone 3 (+0.5%) with an adjusted r^2 of 0.05 (Equation B-16).

Salvageable straw yields of Soil zone areas were significantly lower than the Irrigation zone in Soil zone 4 (-318 kg/ha) and Soil zone 2 (-321 kg/ha) with an adjusted r^2 of 0.04 (Equation B-17).

Fiber yields of Soil zone areas were significantly lower than the Irrigation zone in Soil zone 4 (-39 kg/ha) and Soil zone 2 (-62 kg/ha) with an adjusted r^2 of 0.03 (Equation B-18).

Cut straw lengths were significantly higher than 2005 in 2004 (+8.7 cm), and 2003 (+1.4 cm) with an adjusted r^2 of 0.23 (Equation B-19).

Fiber contents were significantly higher than 2005 in 2004 (+0.5%), and significantly lower in 2003 (-3.7%) with an adjusted r^2 of 0.26 (Equation B-20).

Salvageable straw yields were significantly higher than 2005 in 2004 (+742 kg/ha) with an adjusted r^2 of 0.14 (Equation B-21).

Fiber yields were significantly higher than 2005 in 2004 (+130 kg/ha) with an adjusted r^2 of 0.15 (Equation B-22).

Cut straw lengths in the Agricore United Trials were significantly higher than the SAC flax trial with an adjusted r^2 of 0.01 (Equation B-23).

Cut Straw Lengths (cm) = 21.28 cm + 2.81(Agricore United Trial)

Fiber Contents in the Agricore United Trials were significantly lower than the SAC flax trial with an adjusted r^2 of 0.03 (Equation B-24).

Fiber Contents (%) = 19.7 % - 2.9(Agricore United Trial)

Salvageable Straw Yields in the Agricore United Trials were significantly lower than the SAC flax trial with an adjusted r^2 of 0.01 (Equation B-25).

Salvageable Straw Yield (kg/ha) = 19.7 % - 2.9(Agricore United Trial)

Fiber Yields in the Agricore United Trials were significantly lower than the SAC flax trial with an adjusted r^2 of 0.02 (Equation B-26).

Fiber Yield (kg/ha) = 286.11 kg/ha - 107.47(Agricore United Trial)

Cut Straw Lengths in the solin varieties were significantly lower than the linseed varieties with an adjusted r^2 of 0.00 (Equation B-27).

Cut Straw Lengths (cm) = 24.25 cm - 0.92(Solin Variety)

Fiber Content in the solin varieties were significantly higher than the linseed varieties with an adjusted r^2 of 0.04 (Equation B-28).

Fiber Content (%) = 16.5% + 1.5(Solin Variety)

Salvageable Straw Yields were significantly correlated to Fiber Contents (%) with an adjusted r^2 of 0.04 (Equation B-29).

Salvageable Straw Yield (kg/ha) = 173.59 + 5,168.90(Fiber Content)

Fiber Yields were significantly correlated to Fiber Contents (%) with an adjusted r^2 of 0.13 (Equation B-30).

Fiber Yield (kg/ha) = (127.69) + 1,840.50(Fiber Content)

Results By Crop Production (Soil Zone) Area

Saskatchewan farmers rely on the "Seed Production Guide" for variety information to assist in the selection of seed for production. Fiber is becoming an aspect that farmers will want to have information on. Table 5 shows the expanded seed guide with columns for straw and fiber information.

Table 2 presents the fiber content, fiber yield and see yield from each location and soil zone area indexed to CDC Gold.

Table 3 presents the fiber content, fiber yield and seed yield from each location and soil zone area indexed to the site average. The reader should keep in mind that there were very significant differences in weather patterns among locations and years in a given soil zone and hence the aggregated soil zone results need to be treated with great caution.

Saskatchewan farmers rely on the "Seed Production Guide" for variety information to assist in the selection of seed for production. Fiber is becoming an aspect that farmers will want to have information on. Table 5 shows the expanded seed guide with columns for straw and fiber information.

Oilseed Crops 2006

Flax
Main characteristics of varieties

Variety	Years Seed Yld. Tested	Seed Yield as a % of Bethune* Area 1 and 2	Area 3 and 4	Irrigation	Fiber Yield as a % of Bethune* Area 1 and 2	Area 3 and 4	Irrigation	Salvageable Straw Yield as a % of Bethune* Area 1 and 2	Area 3 and 4	Irrigation	Maturity**	Seed Size	Resistance to Lodging
CDC Bethune	10	100	100	100	100	100	100	100	100	100	L	M	G
CDC Arras	10	95	92	92	81	88	121	91	96	125	M	L	F
AC Carnduff	8	86	89	91	83	94	132	93	98	140	M	M	G
Flanders	10	90	87	91	-	-	-	-	-	-	L	S	G
Hanley	4	90	90	93	104	103	115	106	106	114	M	M	G
Lightning	6	92	92	93	87	120	146	101	130	152	L	M	G
Macbeth	4	91	93	94	92	99	155	97	109	159	L	M	G
CDC Mons	4	99	96	93	78	101	88	88	110	93	L	S	G
CDC Normandy	6	91	93	89	57	42	49	71	58	66	M	M	F
Prairie Blue	4	99	92	97	90	119	120	87	115	112	L	S	VG
CDC Sorrel	4	102	106		-	-	-	-	-	-	L	L	G
Taurus	6	94	99	94	98	117	228	103	119	204	M	M	G
CDC Valour	6	91	86	84	60	37	50	71	51	73	E	M	G
Vimy	10	94	90	85	92	102	116	96	110	131	M	L	P
AC Watson	6	88	93	92	65	96	149	73	104	152	M	M	G
Solin													
CDC Gold	4	78	79	76	93	94	94	82	87	98	E	L	G
2047	4	86	89	86	103	102	85	99	103	92	M	M	G
2090	4	91	98	90	89	97	99	87	97	94	M	L	G
2149	4	88	97		117	99	23	91	85	24	M	M	F

*Data from Regional and Coop yield trials

**Relative Maturity: The relative maturity of the check, CDC Bethune, is L (on average 101 days from seeding to swathing ripeness).

Additional Information

All varieties are resistant to rust and moderately resistant to Fusarium wilt.

No seed of CDC Sorrel and 2149 will be available in 2006.

Solin is defined as a type of flax with less than 5% linolenic acid in its oil and having a yellow seed coat. Solin varieties produce food quality oil and, as such, cannot be sold in traditional flax markets. They are available only for contract product

Frozen flax should be analyzed by a feed testing laboratory to determine that it is free of prussic acid before using it as a livestock feed.

Genetic Progress trials

Appendix C contains printouts of the data resulting from the collection, preparation and fiber yield determination of samples of 25 varieties collected at 4 locations grown in 2003, 2004 and 2005 from Genetic Progress trials in Saskatchewan. Appendix D presents the results of regression equations that were run on the data in Appendix C to identify explanatory variables that have a statistically significant impact on bast fiber content and yield. The equations that are presented in Appendix D were selected as being those that make best use of the data that was generated from the 2003, 2004 and 2005 trials.

Sources and Usefulness of Oilseed Flax Straw Samples

The little rain received at locations, the early frost and late fall conditions at many sites in Saskatchewan meant that the results may not indicate the fiber contents or yields to be expected in more normal years. We do not know how much bias and misleading information was generated by these conditions.

The Saskatchewan Genetic Progress sites each had twenty-five conventional flax varieties. In total, 619 straw samples were collected for analysis representing 25 varieties, 3 years and 4 sites. For most varieties, straw samples were available from 3 replications at each site.

Sources of Error

In the 2004 Genetic Progress trials, Indian Head was written off for seed analysis by the trial manager, straw was hand pulled by Biolin staff and cut, as a bundle, at the lowest point where the seed bolls discontinued.

In our methods there are a number of sources of variance and sampling error. Some of the more important and/or more common are listed below:

- Different varieties mature at somewhat different times, however, all the straw at one location is cut and harvested on the same day. Since some varieties are not as mature, their bast fibers do not

develop equally; hence the calculated fiber content can vary above or below what its "true" value would be if the variety was left to mature.

The NIR protocol will also have variance or error associated with it. The following is a short list of some of the factors that can cause such variance in NIR protocols.

- The straw being tested may contain chemical substances or microorganisms that are undetected but affect part of the spectra under consideration.

- The straw samples may not be properly and/or consistently mixed, prepared or placed in the sampling box. Biolin staff has extensive experience in representative sampling of plots of flax straw and thus samples gathered and tested by Biolin technicians may have less error than those collected by other organizations.

We are continuing to try to eliminate or reduce these possible sources of error but realize that there will always be a test variance or error term associated with our results. The goal then is to reduce it and learn to take it into account when presenting results.

Results

Table 6 presents the fiber content, fiber yield and seed yield from each location. The results in Table 7 are indexed to Vimy, and the results in Table 8 are indexed to the average of all results within that site. The data on which the index numbers are based is found in Appendix C.

The field averages for cut straw lengths were Indian Head(2004) (43 cm), Melfort(2003) (29 cm), Melfort(2004) (27 cm), Kernen(2004) (22 cm), Indian Head(2003) (19 cm), Indian Head(2005) (19 cm), and Kernen(2005) (16 cm), Regina(2005) (26 cm), Regina(2003) (15 cm).

The field average for Fiber Contents were Indian Head(2005) (18.9%), Melfort(2004) (17.5%), Kernen(2004) (17.2%), Regina(2005) (17.2%), Indian Head(2004) (16.6%), Melfort(2003) (13.5%), Kernen(2005) (13.1%), Indian Head(2003) (12.2%), and Regina(2003) (7.4%).

The field averages for Salvageable Straw Yields were Indian Head(2004) (4,124 kg/ha), Melfort(2004) (1,348 kg/ha), Melfort(2003) (1,129), Kernen (1,008 kg/ha), Regina(2005) (473 kg/ha), Indian Head(2003) (418 kg/ha), Kernen(2005) (388), Regina(2003) (307 kg/ha), and Indian Head(2005) (167 kg/ha).

The field averages for Fiber Yields were Indian Head(2004) (687 kg/ha), Melfort(2004) (238 kg/ha), Melfort(2003) (153 kg/ha), Kernen(2004) (177 kg/ha), Regina(2005) (82 kg/ha), Kernen(2005) (51 kg/ha), Indian Head(2003) (51 kg/ha), Indian Head(2005) (31 kg/ha), and Regina(2003) (22 kg/ha).

The four highest variety averages for cut straw lengths were Reserve (Indian Head 2004) (51 cm), Rio (Indian Head 2004) (50 cm), McGregor (Indian Head 2004) (49 cm), Rocket (Indian Head 2004) (46 cm), and the four lowest field average for cut straw lengths were Rio (Regina 2003), Macbeth (Regina 2005) (13 cm), Redwood 65 (Regina 2003) (13 cm), CDC Bethune (Regina 2003) (12 cm). The four varieties with the highest cut straw length had an average cut straw length that was 3.9 times greater than the cut straw length of the four varieties with the lowest cut straw length. The average cut straw length of the highest average cut straw length variety (Reserve (Indian Head 2004)) was more than four times greater than at the lowest cut straw length variety (CDC Bethune (Regina 2003)).

The four highest variety averages for fiber contents were Norlin (Indian Head 2005) (21.7%), J.W.S. (Kernen 2004) (20.9%), Hanley (Indian Head 2005) (20.8%), AC Watson (Indian Head 2005) (20.5%), and the four lowest variety average for fiber contents were AC Watson (Regina 2003) (5.7%), Flanders (Regina 2003) (5.6%), Bison (Regina 2003) (5.6%), AC McDuff (Regina 2003) (5.4%). The four varieties with the highest fiber contents had an average fiber content that was 3.8 times greater than the fiber content of the four varieties with the lowest fiber contents. The average fiber content of the highest average fiber content (Norlin (Indian Head 2005)) was four times greater than at the lowest fiber content (AC McDuff (Regina 2003)).

The four highest variety averages for salvageable straw yields were Reserve (Indian Head 2004) (5,909 kg/ha), Rio (Indian Head 2004) (5,266 kg/ha), Dufferin (Indian Head 2004) (4,916 kg/ha), and Prairie Blue (Indian Head 2004) (4,880 kg/ha) and the four lowest average for salvageable straw yields were Raja (Indian Head 2005) (118 kg/ha), AC McDuff (Indian Head 2005), CDC Bethune (Indian Head

2005) (110 kg/ha), J.W.S. (Regina 2003) (75 kg/ha). The four varieties with the highest average salvageable straw yields were 50.5 times greater than the salvageable straw yield of the four varieties with the lowest salvageable straw yields. The highest average salvageable straw yield (Reserve (Indian Head 2004)) was seventy-nine times greater than at the lowest salvageable straw yield (J.W.S. (Regina 2003)).

The four highest variety averages for fiber yields were Reserve (Indian Head 2004) (953 kg/ha), Dufferin (Indian Head 2004) (881 kg/ha), Flanders (Indian Head 2004) (876 kg/ha), and Prairie Blue (Indian Head 2004) (844 kg/ha), and the four lowest average fiber yields were Hanley (Regina 2003) (14 kg/ha), CDC Bethune (Regina 2003) (23 kg/ha), Raja (Regina 2003) (13 kg/ha), J.W.S. (Regina 2003) (6 kg/ha). The four varieties with the highest average fiber yields were 78.9 times greater than the four varieties with the lowest fiber yield. The highest average fiber yield (Reserve (Indian Head(2004)) was over one hundred and fifty-nine times greater than at the lowest salvageable straw yield (J.W.S. (Regina 2003)).

In Table 8 the variety averages are indexed on field averages. This is very nice for comparison of varietal reactions within multiple fields.

Table 6 - Genetic Progress Averages of Results Sorted by Field and Variety

Cut Straw Ht (g)										Fiber Content (%)									
	A	A	A	A	A	A	A	A	A		B	B	B	B	B	B	B	B	B
NAME	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina	NAME	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina
	2003	2004	2005	2004	2005	2003	2004	2003	2005		2003	2004	2005	2004	2005	2003	2004	2003	2005
AC Emerson	19	35	19	21	16	28	26	13	17	AC Emerson	10.0%	17.8%	20.1%	18.5%	12.4%	13.7%	18.3%	8.5%	19.9%
AC Linora	19	45	19	20	16	29	25	15	16	AC Linora	11.7%	15.5%	17.0%	16.4%	11.8%	12.6%	14.2%	8.0%	14.5%
AC McDuff	20	43	19	22	16	31	29	15	14	AC McDuff	11.5%	14.8%	17.2%	14.0%	12.6%	13.6%	16.2%	5.4%	15.7%
AC Watson	19	44	19	20	16	32	29	15	15	AC Watson	14.8%	17.4%	20.5%	18.7%	14.0%	11.9%	19.2%	5.7%	19.1%
Bison	21	44	18	24	16	33	28	19	19	Bison	10.3%	14.0%	17.7%	16.3%	10.6%	12.6%	17.1%	5.6%	16.5%
CDC Bethune	18	41	18	22	15	28	26	12	16	CDC Bethune	11.4%	15.5%	17.4%	15.3%	13.1%	14.7%	16.9%	7.3%	15.9%
Dufferin	19	45	19	22	17	27	29	15	17	Dufferin	12.2%	17.7%	19.5%	19.1%	14.7%	12.2%	18.0%	6.8%	20.1%
Flanders	17	43	19	19	16	29	27	17	14	Flanders	13.6%	18.4%	19.6%	16.5%	14.6%	12.5%	18.1%	5.6%	19.1%
Hanley	16	37	19	23	15	29	25	15	13	Hanley	12.7%	16.8%	20.8%	17.5%	13.0%	13.8%	18.5%	7.3%	18.7%
J.W.S.	21	45	19	26	16	31	28	14	15	J.W.S.	13.0%	18.7%	19.8%	20.9%	15.2%	14.1%	19.0%	8.0%	16.8%
Lightning	18	45	19	23	17	27	27	17	16	Lightning	13.9%	15.5%	17.8%	15.0%	10.9%	14.7%	16.4%	8.7%	15.7%
Linott	21	38	19	23	17	29	24	15	16	Linott	10.7%	14.0%	18.1%	17.7%	12.3%	10.7%	15.1%	6.4%	14.3%
Macbeth	19	44	19	21	15	28	29	15	13	Macbeth	13.7%	16.3%	18.3%	16.2%	10.4%	13.7%	17.2%	6.8%	16.8%
McGregor	18	49	19	21	17	29	23	16	16	McGregor	12.1%	17.9%	19.0%	16.0%	14.0%	14.4%	17.6%	7.2%	17.8%
Norlin	20	40	19	23	16	31	27	16	18	Norlin	10.8%	18.5%	21.7%	20.3%	14.6%	13.3%	18.9%	6.9%	20.1%
Prairie Blue	18	45	19	24	16	32	27	15	17	Prairie Blue	11.7%	17.2%	18.3%	16.4%	13.5%	13.5%	17.4%	8.3%	19.5%
Raja	20	30	19	21	16	28	27	16	16	Raja	14.2%	15.3%	19.5%	17.8%	12.8%	12.5%	16.7%	8.9%	16.6%
Redson	16	39	19	26	16	29	27	17	13	Redson	12.7%	17.0%	20.4%	19.5%	13.2%	14.7%	17.1%	7.2%	16.6%
Redwing	18	42	19	24	16	25	27	16	17	Redwing	12.2%	16.8%	19.2%	19.0%	12.6%	13.8%	17.4%	7.9%	16.7%
Redwood	19	41	19	24	16	33	28	16	17	Redwood	11.3%	18.0%	19.0%	15.3%	13.5%	13.2%	17.6%	8.4%	16.5%
Redwood 65	19	42	19	22	17	29	25	13	14	Redwood 65	10.0%	16.6%	19.8%	19.3%	14.0%	15.7%	18.6%	8.5%	17.5%
Reserve	19	51	19	21	17	31	24	15	16	Reserve	12.6%	16.1%	17.4%	14.2%	12.8%	14.9%	17.4%	6.8%	15.5%
Rio	18	50	19	18	17	32	23	13	16	Rio	9.8%	15.3%	17.7%	16.3%	12.9%	12.7%	18.1%	8.0%	16.2%
Rocket	16	46	19	23	16	29	28	17	16	Rocket	13.7%	16.6%	18.9%	16.3%	13.4%	13.8%	18.2%	6.3%	16.3%
Vimy	21	44	19	21	18	29	26	15	16	Vimy	12.1%	16.3%	18.3%	17.5%	12.9%	14.8%	18.3%	7.7%	16.8%
Field Averages /a	**19**	**43**	**19**	**22**	**16**	**29**	**27**	**15**	**16**	**Field Averages /a**	**12.2%**	**16.6%**	**18.9%**	**17.2%**	**13.1%**	**13.5%**	**17.5%**	**7.4%**	**17.2%**
LSD	**3**	**12**	**1**	**6**	**2**	**6**	**5**	**4**	**3**	**LSD**	**2.1%**	**1.8%**	**1.9%**	**2.8%**	**2.6%**	**1.8%**	**1.6%**	**2.7%**	**2.2%**
c.v.	**10.0%**	**17.5%**	**2.5%**	**16.2%**	**7.7%**	**11.9%**	**11.8%**	**14.9%**	**14.4%**	**c.v.**	**13.1%**	**9.4%**	**8.4%**	**13.3%**	**13.6%**	**10.4%**	**8.0%**	**22.1%**	**11.5%**

a/ Field averages are the average of all varieties at that location, expressed in actual units (Salvaged Straw Yield in kg/ha, fiber content in percentage, fiber yield in kg/ha)

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'NIR Fiber % On Unretted Straw' (Column C * Column B)

Table 6 - Genetic Progress Averages of Results Sorted by Field and Variety

Cut Straw Ht (g)										Fiber Content (%)									
	A	A	A	A	A	A	A	A	A		B	B	B	B	B	B	B	B	B
NAME	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina	NAME	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina
	2003	*2004*	*2005*	*2004*	*2005*	*2003*	*2004*	*2003*	*2005*		*2003*	*2004*	*2005*	*2004*	*2005*	*2003*	*2004*	*2003*	*2005*
AC Emerson	19	35	19	21	16	28	26	13	17	AC Emerson	10.0%	17.8%	20.1%	18.5%	12.4%	13.7%	18.3%	8.5%	19.9%
AC Linora	19	45	19	20	16	29	25	15	16	AC Linora	11.7%	15.5%	17.0%	16.4%	11.8%	12.6%	14.2%	8.0%	14.5%
AC McDuff	20	43	19	22	16	31	29	15	14	AC McDuff	11.5%	14.8%	17.2%	14.0%	12.6%	13.6%	16.2%	5.4%	15.7%
AC Watson	19	44	19	20	16	32	29	15	15	AC Watson	14.8%	17.4%	20.5%	18.7%	14.0%	11.9%	19.2%	5.7%	19.1%
Bison	21	44	18	24	16	33	28	19	19	Bison	10.3%	14.0%	17.7%	16.3%	10.6%	12.6%	17.1%	5.6%	16.5%
CDC Bethune	18	41	18	22	15	28	26	12	16	CDC Bethune	11.4%	15.5%	17.4%	15.3%	13.1%	14.7%	16.9%	7.3%	15.9%
Dufferin	19	45	19	22	17	27	29	15	17	Dufferin	12.2%	17.7%	19.5%	19.1%	14.7%	12.2%	18.0%	6.8%	20.1%
Flanders	17	43	19	19	16	29	27	17	14	Flanders	13.6%	18.4%	19.6%	16.5%	14.6%	12.5%	18.1%	5.6%	19.1%
Hanley	16	37	19	23	15	29	25	15	13	Hanley	12.7%	16.8%	20.8%	17.5%	13.0%	13.8%	18.5%	7.3%	18.7%
J.W.S.	21	45	19	26	16	31	28	14	15	J.W.S.	13.0%	18.7%	19.8%	20.9%	15.2%	14.1%	19.0%	8.0%	16.8%
Lightning	18	45	19	23	17	27	27	17	16	Lightning	13.9%	15.5%	17.8%	15.0%	10.9%	14.7%	16.4%	8.7%	15.7%
Linott	21	38	19	23	17	29	24	15	16	Linott	10.7%	14.0%	18.1%	17.7%	12.3%	10.7%	15.1%	6.4%	14.3%
Macbeth	19	44	19	21	15	28	29	15	13	Macbeth	13.7%	16.3%	18.3%	16.2%	10.4%	13.7%	17.2%	6.8%	16.8%
McGregor	18	49	19	21	17	29	23	16	16	McGregor	12.1%	17.9%	19.0%	16.0%	14.0%	14.4%	17.6%	7.2%	17.8%
Norlin	20	40	19	23	16	31	27	16	18	Norlin	10.8%	18.5%	21.7%	20.3%	14.6%	13.3%	18.9%	6.9%	20.1%
Prairie Blue	18	45	19	24	16	32	27	15	17	Prairie Blue	11.7%	17.2%	18.3%	16.4%	13.5%	13.5%	17.4%	8.3%	19.5%
Raja	20	30	19	21	16	28	27	16	16	Raja	14.2%	15.3%	19.5%	17.8%	12.8%	12.5%	16.7%	8.9%	16.6%
Redson	16	39	19	26	16	29	27	17	13	Redson	12.7%	17.0%	20.4%	19.5%	13.2%	14.7%	17.1%	7.2%	16.6%
Redwing	18	42	19	24	16	25	27	16	17	Redwing	12.2%	16.8%	19.2%	19.0%	12.6%	13.8%	17.4%	7.9%	16.7%
Redwood	19	41	19	24	16	33	28	16	17	Redwood	11.3%	18.0%	19.0%	15.3%	13.5%	13.2%	17.6%	8.4%	16.5%
Redwood 65	19	42	19	22	17	29	25	13	14	Redwood 65	10.0%	16.6%	19.8%	19.3%	14.0%	15.7%	18.6%	8.5%	17.5%
Reserve	19	51	19	21	17	31	24	15	16	Reserve	12.6%	16.1%	17.4%	14.2%	12.8%	14.9%	17.4%	6.8%	15.5%
Rio	18	50	19	18	17	32	23	13	16	Rio	9.8%	15.3%	17.7%	16.3%	12.9%	12.7%	18.1%	8.0%	16.2%
Rocket	16	46	19	23	16	29	28	17	16	Rocket	13.7%	16.6%	18.9%	16.3%	13.4%	13.8%	18.2%	6.3%	16.3%
Vimy	21	44	19	21	18	29	26	15	16	Vimy	12.1%	16.3%	18.3%	17.5%	12.9%	14.8%	18.3%	7.7%	16.8%
Field Averages /a	**19**	**43**	**19**	**22**	**16**	**29**	**27**	**15**	**16**	**Field Averages /a**	**12.2%**	**16.6%**	**18.9%**	**17.2%**	**13.1%**	**13.5%**	**17.5%**	**7.4%**	**17.2%**
LSD	**3**	**12**	**1**	**6**	**2**	**6**	**5**	**4**	**3**	**LSD**	**2.1%**	**1.8%**	**1.9%**	**2.8%**	**2.6%**	**1.8%**	**1.6%**	**2.7%**	**2.2%**
c.v.	**10.0%**	**17.5%**	**2.5%**	**16.2%**	**7.7%**	**11.9%**	**11.8%**	**14.9%**	**14.4%**	**c.v.**	**13.1%**	**9.4%**	**8.4%**	**13.3%**	**13.6%**	**10.4%**	**8.0%**	**22.1%**	**11.5%**

a/ Field averages are the average of all varieties at that location, expressed in actual units (Salvaged Straw Yield in kg/ha, fiber content in percentage, fiber yield in kg/ha)

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed drill heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the "1m2 Salvaged Straw Wt (g)" times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the "Salvaged Straw Yield (kg/ha)" times the NIR Fiber % On Unretted Straw (Column C * Column B)

Salvagable Straw Yield (kg/ha)										Fiber Yield Based On Salvaged Straw (kg/ha)									
	C	C	C	C	C	C	C	C	C		D	D	D	D	D	D	D	D	D
NAME	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina	NAME	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina
	2003	2004	2005	2004	2005	2003	2004	2003	2005		2003	2004	2005	2004	2005	2003	2004	2003	2005
AC Emerson	310	3,426	180	936	346	976	1,253	243	488	AC Emerson	31	605	36	172	42	134	229	20	100
AC Linora	651	4,268	194	831	479	1,162	1,351	342	483	AC Linora	75	663	32	131	57	146	196	27	70
AC McDuff	325	4,511	113	853	400	1,161	1,613	301	365	AC McDuff	39	670	19	124	51	158	261	16	57
AC Watson	457	3,611	184	627	352	1,442	1,551	297	404	AC Watson	68	631	38	117	49	175	300	17	81
Bison	427	3,716	159	1,006	364	1,224	1,400	360	669	Bison	44	528	28	164	38	159	241	20	111
CDC Bethune	438	4,152	110	1,121	356	1,045	1,142	178	426	CDC Bethune	50	652	19	173	48	154	194	13	68
Dufferin	358	4,916	170	1,210	427	966	1,550	483	554	Dufferin	45	881	33	232	63	118	281	33	111
Flanders	370	4,730	185	895	407	1,168	1,275	531	408	Flanders	50	876	36	150	59	145	230	29	78
Hanley	499	3,142	143	1,021	400	1,084	1,476	211	360	Hanley	63	535	29	180	53	150	274	14	67
J.W.S.	591	4,111	150	1,498	363	1,182	1,472	75	390	J.W.S.	77	771	30	311	55	167	283	6	65
Lightning	413	4,259	179	987	359	955	1,561	352	469	Lightning	58	661	32	161	38	142	258	31	73
Linott	403	3,552	128	788	491	1,077	864	301	482	Linott	43	501	23	139	59	115	132	19	70
Macbeth	364	4,621	152	1,098	350	1,125	1,484	389	402	Macbeth	49	741	28	178	37	154	255	26	67
McGregor	440	4,617	200	906	288	1,457	1,026	312	557	McGregor	54	823	38	146	40	210	183	22	100
Norlin	378	4,379	150	856	360	1,185	1,506	386	712	Norlin	39	824	33	177	53	158	286	24	144
Prairie Blue	263	4,880	215	1,221	342	1,330	1,269	330	515	Prairie Blue	32	844	39	202	45	178	221	28	102
Raja	569	2,514	118	958	327	939	1,113	143	362	Raja	81	395	23	171	42	117	188	13	60
Redson	365	3,049	131	1,222	213	945	1,578	452	339	Redson	46	533	26	242	28	138	273	32	56
Redwing	306	3,380	184	1,408	377	1,008	1,417	417	567	Redwing	37	569	35	280	47	140	249	33	95
Redwood	265	3,324	162	970	501	1,276	1,591	322	452	Redwood	30	599	31	151	69	167	278	22	74
Redwood 65	473	3,899	168	1,161	399	974	1,114	268	406	Redwood 65	47	637	33	229	55	154	210	23	73
Reserve	281	5,909	162	1,041	428	1,172	1,093	381	560	Reserve	36	953	28	156	55	176	192	26	86
Rio	477	5,266	215	589	427	1,133	1,085	222	441	Rio	48	805	38	97	56	144	197	18	71
Rocket	477	4,667	219	940	477	980	1,633	395	490	Rocket	65	781	41	154	64	135	297	24	81
Vimy	409	4,194	203	1,052	460	1,261	1,290	284	565	Vimy	51	686	36	185	62	187	236	20	95
Field Averages /a	**418**	**4,124**	**167**	**1,008**	**388**	**1,129**	**1,348**	**307**	**473**	**Field Averages /a**	**51**	**687**	**31**	**177**	**51**	**153**	**238**	**22**	**82**
LSD	**272**	**2,415**	**68**	**654**	**250**	**307**	**851**	**249**	**198**	**LSD**	**33**	**426**	**11**	**132**	**29**	**62**	**162**	**17**	**49**
c.v.	**33.3%**	**34.2%**	**28.2%**	**37.8%**	**33.1%**	**18.6%**	**38.4%**	**48.4%**	**31.2%**	**c.v.**	**35.9%**	**36.4%**	**26.4%**	**45.9%**	**36.3%**	**21.8%**	**39.6%**	**47.2%**	**38.2%**

a/ Field averages are the average of all varieties at that location, expressed in actual units (Salvaged Straw Yield in kg/ha, fiber content in percentage, fiber yield in kg/ha)

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'NIR Fiber % On Unretted Straw' (Column C * Column B)

Salvagable Straw Yield (kg/ha)

NAME	C Indian Head 2003	C Indian Head 2004	C Indian Head 2005	C Kernan 2004	C Kernan 2005	C Melfort 2003	C Melfort 2004	C Regina 2003	C Regina 2005
AC Emerson	310	3,426	180	936	346	976	1,253	243	488
AC Linora	651	4,268	194	831	479	1,162	1,351	342	483
AC McDuff	325	4,511	113	853	400	1,161	1,613	301	365
AC Watson	457	3,611	184	627	352	1,442	1,551	297	404
Bison	427	3,716	159	1,006	364	1,224	1,400	360	669
CDC Bethune	438	4,152	110	1,121	356	1,045	1,142	178	426
Dufferin	358	4,916	170	1,210	427	966	1,550	483	554
Flanders	370	4,730	185	895	407	1,168	1,275	531	408
Hanley	499	3,142	143	1,021	400	1,084	1,476	211	360
J.W.S.	591	4,111	150	1,498	363	1,182	1,472	75	390
Lightning	413	4,259	179	987	359	955	1,561	352	469
Linott	403	3,552	128	788	491	1,077	864	301	482
Macbeth	364	4,621	152	1,098	350	1,125	1,484	389	402
McGregor	440	4,617	200	906	288	1,457	1,026	312	557
Norlin	378	4,379	150	856	360	1,185	1,506	386	712
Prairie Blue	263	4,880	215	1,221	342	1,330	1,269	330	515
Raja	569	2,514	118	958	327	939	1,113	143	362
Redson	365	3,049	131	1,222	213	945	1,578	452	339
Redwing	306	3,360	184	1,408	377	1,008	1,417	417	567
Redwood	265	3,324	162	970	501	1,276	1,591	322	452
Redwood 65	473	3,899	168	1,161	399	974	1,114	268	406
Reserve	281	5,909	162	1,041	428	1,172	1,093	381	560
Rio	477	5,266	215	589	427	1,133	1,085	222	441
Rocket	477	4,667	219	940	477	980	1,633	395	490
Vimy	409	4,194	203	1,052	460	1,201	1,290	284	565
Field Averages /a	**418**	**4,124**	**167**	**1,008**	**388**	**1,129**	**1,348**	**307**	**473**
LSD	**272**	**2,415**	**68**	**654**	**250**	**307**	**851**	**249**	**198**
c.v.	**33.3%**	**34.2%**	**28.2%**	**37.8%**	**33.1%**	**18.6%**	**38.4%**	**48.4%**	**31.2%**

Fiber Yield Based On Salvaged Straw (kg/ha)

NAME	D Indian Head 2003	D Indian Head 2004	D Indian Head 2005	D Kernan 2004	D Kernan 2005	D Melfort 2003	D Melfort 2004	D Regina 2003	D Regina 2005
AC Emerson	31	605	36	172	42	134	229	20	100
AC Linora	75	663	32	131	57	146	196	27	70
AC McDuff	39	670	19	124	51	158	261	16	57
AC Watson	68	631	38	117	49	175	300	17	81
Bison	44	528	28	164	38	159	241	20	111
CDC Bethune	50	652	19	173	48	154	194	13	68
Dufferin	45	881	33	232	63	118	281	33	111
Flanders	50	876	36	150	59	145	230	29	78
Hanley	63	535	29	180	53	150	274	14	67
J.W.S.	77	771	30	311	55	167	283	6	65
Lightning	58	661	32	161	38	142	258	31	73
Linott	43	501	23	139	59	115	132	19	70
Macbeth	49	741	28	178	37	154	255	26	67
McGregor	54	823	38	146	40	210	183	22	100
Norlin	39	824	33	177	53	158	286	24	144
Prairie Blue	32	844	39	202	45	178	221	28	102
Raja	81	395	23	171	42	117	188	13	60
Redson	46	533	26	242	28	138	273	32	56
Redwing	37	569	35	280	47	140	249	33	95
Redwood	30	599	31	151	69	167	278	22	74
Redwood 65	47	637	33	229	55	154	210	23	73
Reserve	36	953	28	156	55	176	192	26	86
Rio	48	805	38	97	56	144	197	18	71
Rocket	65	781	41	154	64	135	297	24	81
Vimy	51	686	36	185	62	187	236	20	95
Field Averages /a	**51**	**687**	**31**	**177**	**51**	**153**	**238**	**22**	**82**
LSD	**33**	**425**	**11**	**132**	**29**	**62**	**152**	**17**	**49**
c.v.	**35.9%**	**36.4%**	**26.4%**	**45.9%**	**35.3%**	**21.8%**	**39.6%**	**47.2%**	**38.2%**

a/ Field averages are the average of all varieties at that location, expressed in actual units (Salvaged Straw Yield in kg/ha, fiber content in percentage, fiber yield in kg/ha)

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and bolders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the 1m2 Salvaged Straw Wt (g) times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the Salvaged Straw Yield (kg/ha) times the NIR Fiber % On Unretted Straw (Column C * Column B)

Table 7 - Genetic Progress, Table 6 Indexed on Vimy (Vimy = 100) Sorted by Year, Field and Variety

Cut Straw Ht (g)										Fiber Content (%)									
	A	A	A	A	A	A	A	A	A		B	B	B	B	B	B	B	B	B
Variety	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina	Variety	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina
	2003	*2004*	*2005*	*2004*	*2005*	*2003*	*2004*	*2003*	*2005*		*2003*	*2004*	*2005*	*2004*	*2005*	*2003*	*2004*	*2003*	*2005*
AC Emerson	93	81	102	102	87	95	97	89	109	AC Emerson	82	109	110	106	96	93	100	110	119
AC Hanley	90	104	102	98	91	100	95	100	102	AC Hanley	97	95	93	94	91	85	78	104	87
AC Lightning	98	99	102	106	89	107	109	98	91	AC Lightning	95	91	94	80	97	92	89	70	94
AC Linora	90	101	102	97	87	111	111	100	96	AC Linora	122	107	112	107	109	81	105	73	114
AC McDuff	102	101	96	118	89	113	106	127	121	AC McDuff	85	86	97	93	82	86	94	72	99
AC Watson	88	94	98	108	81	97	97	82	99	AC Watson	94	95	95	87	102	99	93	95	95
Bison	93	102	100	106	93	94	111	97	106	Bison	101	109	107	109	113	83	98	88	120
CDC Bethune	83	99	102	94	91	99	103	110	91	CDC Bethune	112	113	107	94	113	84	99	73	114
Dufferin	78	85	102	111	81	99	94	98	85	Dufferin	105	103	114	100	101	93	101	95	111
Flanders	100	104	100	127	89	107	105	90	94	Flanders	107	114	108	119	117	95	104	104	100
J.W.S.	87	104	102	110	93	92	101	116	99	J.W.S.	115	95	97	86	84	99	90	112	93
Linott	100	88	100	110	93	99	91	97	99	Linott	88	86	99	101	95	72	83	83	86
Macbeth	93	101	102	102	85	98	109	100	83	Macbeth	114	100	100	93	81	93	94	88	100
McGregor	88	113	102	103	93	101	86	104	104	McGregor	100	110	104	91	108	97	97	93	106
Norlin	98	92	102	110	87	107	104	107	115	Norlin	89	114	119	116	113	90	104	89	120
Prairie Blue	85	102	102	118	87	109	103	100	106	Prairie Blue	97	106	100	94	104	91	95	107	116
Raja	98	69	102	100	91	97	104	107	100	Raja	118	94	106	102	99	85	92	115	99
Redson	78	90	102	124	87	100	104	113	85	Redson	105	104	111	111	102	99	93	94	99
Redwing	88	97	102	118	91	85	104	107	106	Redwing	101	103	105	108	97	94	95	102	100
Redwood	93	95	102	116	91	114	105	109	109	Redwood	93	110	104	87	104	89	96	109	98
Redwood 65	93	96	102	105	94	100	94	84	91	Redwood 65	82	102	108	110	108	106	102	111	104
Reserve	93	117	100	100	93	106	90	97	102	Reserve	105	99	95	81	99	101	96	88	93
Rio	88	115	102	87	94	111	87	87	100	Rio	81	94	97	93	99	86	99	104	96
Rocket	78	106	102	110	89	101	108	110	100	Rocket	113	102	103	93	104	94	99	82	97
Vimy	100	100	100	100	100	100	100	100	100	Vimy	100	100	100	100	100	100	100	100	100
VIMY	21	44	19	21	18	29	26	15	18	VIMY	12.1%	16.3%	18.3%	17.5%	12.9%	14.8%	18.3%	7.7%	16.8%

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'NIR Fiber % On Unretted Straw' (Column C * Column B)

NOTES:

Table 7 - Genetic Progress, Table 6 Indexed on Vimy (Vimy = 100) Sorted by Year, Field and Variety

Cut Straw Ht (g)										Fiber Content (%)									
	A	A	A	A	A	A	A	A	A		B	B	B	B	B	B	B	B	B
Variety	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina	Variety	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina
	2003	*2004*	*2005*	*2004*	*2005*	*2003*	*2004*	*2003*	*2005*		*2003*	*2004*	*2005*	*2004*	*2005*	*2003*	*2004*	*2003*	*2005*
AC Emerson	93	81	102	102	87	95	97	89	109	AC Emerson	82	109	110	106	96	93	100	110	119
AC Hanley	90	104	102	98	91	100	95	100	102	AC Hanley	97	95	93	94	91	85	78	104	87
AC Lightning	98	99	102	106	89	107	109	98	91	AC Lightning	95	91	94	80	97	92	89	70	94
AC Linora	90	101	102	97	87	111	111	100	96	AC Linora	122	107	112	107	109	81	105	73	114
AC McDuff	102	101	96	118	89	113	106	127	121	AC McDuff	85	86	97	93	82	86	94	72	99
AC Watson	88	94	98	108	81	97	97	82	99	AC Watson	94	95	95	87	102	99	93	95	95
Bison	93	102	100	106	93	94	111	97	106	Bison	101	109	107	109	113	83	98	88	120
CDC Bethune	83	99	102	94	91	99	103	110	91	CDC Bethune	112	113	107	94	113	84	99	73	114
Dufferin	78	85	102	111	81	99	94	98	85	Dufferin	105	103	114	100	101	93	101	95	111
Flanders	100	104	100	127	89	107	105	90	94	Flanders	107	114	108	119	117	95	104	104	100
J.W.S.	87	104	102	110	93	92	101	116	99	J.W.S.	115	95	97	86	84	99	90	112	93
Linott	100	88	100	110	93	99	91	97	99	Linott	88	86	99	101	95	72	83	83	86
Macbeth	93	101	102	102	85	98	109	100	83	Macbeth	114	100	100	93	81	93	94	88	100
McGregor	88	113	102	103	93	101	86	104	104	McGregor	100	110	104	91	108	97	97	93	106
Norlin	98	92	102	110	87	107	104	107	115	Norlin	89	114	119	116	113	90	104	89	120
Prairie Blue	85	102	102	118	87	109	103	100	106	Prairie Blue	97	106	100	94	104	91	95	107	116
Raja	98	69	102	100	91	97	104	107	100	Raja	118	94	106	102	99	85	92	115	99
Redson	78	90	102	124	87	100	104	113	85	Redson	105	104	111	111	102	99	93	94	99
Redwing	88	97	102	118	91	85	104	107	106	Redwing	101	103	105	108	97	94	95	102	100
Redwood	93	95	102	116	91	114	106	109	109	Redwood	93	110	104	87	104	89	96	109	98
Redwood 65	93	96	102	105	94	100	94	84	91	Redwood 65	82	102	108	110	108	106	102	111	104
Reserve	93	117	100	100	93	106	90	97	102	Reserve	105	99	95	81	99	101	96	88	93
Rio	88	115	102	87	94	111	87	87	100	Rio	81	94	97	93	99	86	99	104	96
Rocket	78	106	102	110	89	101	108	110	100	Rocket	113	102	103	93	104	94	99	82	97
Vimy	100	100	100	100	100	100	100	100	100	Vimy	100	100	100	100	100	100	100	100	100
VIMY	21	44	19	21	18	29	26	15	16	VIMY	12.1%	16.3%	18.3%	17.5%	12.9%	14.8%	18.3%	7.7%	16.8%

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'NIR Fiber % On Unretted Straw' (Column C * Column B)

NOTES:

Salvagable Straw Yield (kg/ha)										NIR Fiber Yield (kg/ha) (B*C)									
	C	C	C	C	C	C	C	C	C		D	D	D	D	D	D	D	D	D
Variety	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina	Variety	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina
	2003	2004	2005	2004	2005	2003	2004	2003	2005		2003	2004	2005	2004	2005	2003	2004	2003	2005
AC Emerson	76	82	89	89	75	77	97	85	86	AC Emerson	61	88	99	93	68	72	97	97	104
AC Hanley	159	102	96	79	104	92	105	120	85	AC Hanley	148	97	89	71	92	78	83	135	74
AC Lightning	79	108	56	81	87	92	125	106	65	AC Lightning	76	98	53	67	82	84	111	80	60
AC Linora	112	86	91	60	77	114	120	104	72	AC Linora	133	92	103	63	80	93	127	84	85
AC McDuff	104	89	78	96	79	97	109	127	118	AC McDuff	86	77	76	89	62	85	102	98	116
AC Watson	107	99	54	107	77	83	89	63	75	AC Watson	98	95	53	93	78	82	82	62	71
Bison	87	117	84	115	93	77	120	170	98	Bison	88	128	90	125	102	63	119	162	116
CDC Bethune	90	113	91	85	88	93	99	187	72	CDC Bethune	99	128	99	81	95	78	98	143	82
Dufferin	122	75	70	97	87	86	114	74	64	Dufferin	125	78	81	97	85	80	116	70	70
Flanders	144	98	74	142	79	94	114	26	69	Flanders	151	112	82	168	89	89	120	29	68
J.W.S.	101	102	88	94	78	76	121	124	83	J.W.S.	113	96	87	87	61	76	109	151	77
Linott	99	85	63	75	107	85	67	106	85	Linott	85	73	64	75	95	62	56	93	73
Macbeth	89	110	75	104	76	89	115	137	71	Macbeth	96	108	77	96	59	83	108	130	70
McGregor	107	110	99	86	63	116	80	110	99	McGregor	106	120	104	79	65	112	77	108	105
Norlin	92	104	74	81	78	94	117	136	126	Norlin	78	120	89	96	85	84	121	119	151
Prairie Blue	64	116	106	116	74	105	98	116	91	Prairie Blue	62	123	108	109	74	95	94	138	106
Raja	139	60	58	91	71	75	86	50	64	Raja	160	57	62	92	68	63	80	62	63
Redson	89	73	64	116	46	75	122	159	60	Redson	91	78	73	131	45	74	116	160	59
Redwing	75	81	90	134	82	80	110	147	100	Redwing	74	83	97	151	76	75	105	161	100
Redwood	65	79	80	92	109	101	123	113	80	Redwood	59	87	85	82	111	90	118	109	78
Redwood 65	116	93	83	110	87	77	86	94	72	Redwood 65	93	93	91	123	89	82	89	115	77
Reserve	69	141	80	99	93	93	85	134	99	Reserve	70	139	77	84	89	94	81	127	90
Rio	117	126	106	56	93	90	84	78	78	Rio	94	117	104	53	90	77	84	88	74
Rocket	117	111	108	89	104	78	127	139	87	Rocket	129	114	114	83	104	72	126	117	85
Vimy	100	100	100	100	100	100	100	100	100	Vimy	100	100	100	100	100	100	100	100	100
VIMY	409	4,194	203	1,052	460	1,261	1,290	284	565	VIMY	51	686	36	195	62	187	236	20	95

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'NIR Fiber % On Unretted Straw' (Column C * Column B)

NOTES:

Salvagable Straw Yield (kg/ha)

	C	C	C	C	C	C	C	C	C
Variety	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina
	2003	*2004*	*2005*	*2004*	*2005*	*2003*	*2004*	*2003*	*2005*
AC Emerson	76	82	89	89	75	77	97	85	86
AC Hanley	159	102	96	79	104	92	105	120	85
AC Lightning	79	108	56	81	87	92	125	106	65
AC Linora	112	86	91	60	77	114	120	104	72
AC McDuff	104	89	78	96	79	97	109	127	118
AC Watson	107	99	54	107	77	83	89	63	75
Bison	87	117	84	115	93	77	120	170	98
CDC Bethune	90	113	91	85	88	93	99	187	72
Dufferin	122	75	70	97	87	86	114	74	64
Flanders	144	98	74	142	79	94	114	26	69
J.W.S.	101	102	88	94	78	76	121	124	83
Linott	99	85	63	75	107	85	67	106	85
Macbeth	89	110	75	104	76	89	115	137	71
McGregor	107	110	99	86	63	116	80	110	99
Norlin	92	104	74	81	78	94	117	136	126
Prairie Blue	64	116	106	116	74	105	98	116	91
Raja	139	60	58	91	71	75	86	50	64
Redson	89	73	64	116	46	75	122	159	60
Redwing	75	81	90	134	82	80	110	147	100
Redwood	65	79	80	92	109	101	123	113	80
Redwood 65	116	93	83	110	87	77	86	94	72
Reserve	69	141	80	99	93	93	85	134	99
Rio	117	126	106	56	93	90	84	78	78
Rocket	117	111	108	89	104	78	127	139	87
Vimy	100	100	100	100	100	100	100	100	100
VIMY	409	4,194	203	1,052	460	1,261	1,290	284	565

NIR Fiber Yield (kg/ha) (B*C)

	D	D	D	D	D	D	D	D	D
Variety	Indian Head	Indian Head	Indian Head	Kernan	Kernan	Melfort	Melfort	Regina	Regina
	2003	*2004*	*2005*	*2004*	*2005*	*2003*	*2004*	*2003*	*2005*
AC Emerson	61	88	99	93	68	72	97	97	104
AC Hanley	148	97	89	71	92	78	83	135	74
AC Lightning	76	98	53	67	82	84	111	80	60
AC Linora	133	92	103	63	80	93	127	84	85
AC McDuff	86	77	76	89	62	85	102	98	116
AC Watson	98	95	53	93	78	82	82	62	71
Bison	88	128	90	125	102	63	119	162	116
CDC Bethune	99	128	99	81	95	78	98	143	82
Dufferin	125	78	81	97	85	80	116	70	70
Flanders	151	112	82	168	89	89	120	29	68
J.W.S.	113	96	87	87	61	76	109	151	77
Linott	85	73	64	75	95	62	56	93	73
Macbeth	96	108	77	96	59	83	108	130	70
McGregor	106	120	104	79	65	112	77	108	105
Norlin	78	120	89	96	85	84	121	119	151
Prairie Blue	62	123	108	109	74	95	94	138	106
Raja	160	57	62	92	68	63	80	62	63
Redson	91	78	73	131	45	74	116	160	59
Redwing	74	83	97	151	76	75	105	161	100
Redwood	59	87	85	82	111	90	118	109	78
Redwood 65	93	93	91	123	89	82	89	115	77
Reserve	70	139	77	84	89	94	81	127	90
Rio	94	117	104	53	90	77	84	88	74
Rocket	129	114	114	83	104	72	126	117	85
Vimy	100	100	100	100	100	100	100	100	100
VIMY	51	686	36	185	62	187	236	20	95

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'NIR Fiber % On Unretted Straw' (Column C * Column B)

NOTES:

Table 8 - Genetic Progress, Table 6 Indexed on Field Averages (Field Average = 100) Sorted by Field, Year and Variety

Cut Straw Ht (g)										Fiber Content (%)									
	A	A	A	A	A	A	A	A	A		B	B	B	B	B	B	B	B	B
Variety	Indian Head	Indian Head	Indian Head	Kernan	Indian Head	Melfort	Melfort	Regina	Regina	Variety	Indian Head	Indian Head	Indian Head	Kernan	Indian Head	Melfort	Melfort	Regina	Indian Head
	2003	*2004*	*2004*	*2004*	*2004*	*2003*	*2004*	*2003*	*2005*		*2003*	*2004*	*2004*	*2004*	*2004*	*2003*	*2004*	*2003*	*2004*
AC Emerson	102	82	101	95	97	94	97	89	109	AC Emerson	82	107	106	108	95	101	105	115	116
AC Hanley	99	106	101	92	101	98	94	100	102	AC Hanley	96	94	90	96	90	93	81	109	84
AC Lightning	107	101	101	99	99	105	108	98	92	AC Lightning	94	90	91	81	96	100	92	73	91
AC Linora	99	103	101	90	97	110	111	100	96	AC Linora	122	105	108	109	108	88	110	77	111
AC McDuff	112	103	95	110	99	111	106	127	121	AC McDuff	85	85	93	95	81	93	98	75	96
AC Watson	96	96	97	101	91	95	97	82	99	AC Watson	93	94	92	89	100	109	97	99	92
Bison	102	104	99	99	103	93	111	97	107	Bison	100	107	103	111	112	91	103	92	117
CDC Bethune	91	101	101	87	101	97	102	110	92	CDC Bethune	111	111	104	96	112	92	103	76	111
Dufferin	86	86	101	104	91	97	93	98	85	Dufferin	104	102	110	102	100	102	106	99	108
Flanders	110	106	99	119	99	105	104	90	94	Flanders	107	113	105	121	116	104	108	108	98
J.W.S.	95	106	101	102	103	90	101	116	99	J.W.S.	115	93	94	87	83	109	94	117	91
Linott	110	89	99	102	103	97	90	97	99	Linott	88	85	96	103	94	79	86	86	83
Macbeth	102	103	101	95	95	96	108	100	83	Macbeth	113	98	97	94	80	101	98	92	98
McGregor	96	115	101	96	103	100	85	105	104	McGregor	100	108	100	93	107	107	101	98	103
Norlin	107	93	101	102	97	105	103	107	115	Norlin	89	112	115	118	112	98	108	93	117
Prairie Blue	94	104	101	110	97	107	102	100	107	Prairie Blue	97	104	97	96	103	100	99	112	113
Raja	107	70	101	93	101	95	103	107	100	Raja	117	92	103	104	98	92	96	121	97
Redson	86	92	101	116	97	98	103	114	85	Redson	104	103	108	113	101	108	97	98	97
Redwing	96	99	101	110	101	84	103	107	107	Redwing	101	101	102	110	96	102	99	107	97
Redwood	102	96	101	108	101	112	106	109	109	Redwood	93	108	100	89	103	98	100	114	96
Redwood 65	102	98	101	98	105	98	93	85	92	Redwood 65	82	100	105	112	107	116	106	116	102
Reserve	102	119	99	93	103	104	89	97	102	Reserve	104	97	92	82	98	110	100	92	90
Rio	96	117	101	81	105	110	87	87	100	Rio	81	92	93	95	98	94	103	109	94
Rocket	86	108	101	102	99	100	107	110	100	Rocket	112	101	100	95	102	102	104	85	94
Vimy	110	102	99	93	111	98	99	100	100	Vimy	99	98	97	102	99	109	104	105	97
Field Averages /a	**18.7**	**42.8**	**18.9**	**22.1**	**16.2**	**29.5**	**26.5**	**15.0**	**15.6**	**Field Averages /a**	**12.2%**	**16.6%**	**18.9%**	**17.2%**	**13.1%**	**13.5%**	**17.5%**	**7.4%**	**17.2%**

a/ Field averages are the average of all varieties at that location, expressed in actual units (Salvaged Straw Yield in kg/ha, fiber content in percentage, fiber yield in kg/ha)

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'NIR Fiber % On Unretted Straw' (Column C * Column B)

NOTES:

Table 8 - Genetic Progress. Table 6 Indexed on Field Averages (Field Average = 100) Sorted by Field, Year and Variety

Cut Straw Ht (g)	A	A	A	A	A	A	A	A	A	Fiber Content (%)	B	B	B	B	B	B	B	B	B
Variety	Indian Head	Indian Head	Indian Head	Kernan	Indian Head	Melfort	Melfort	Regina	Regina	Variety	Indian Head	Indian Head	Indian Head	Kernan	Indian Head	Melfort	Melfort	Regina	Indian Head
	2003	2004	2004	2004	2004	2003	2004	2003	2005		2003	2004	2004	2004	2004	2003	2004	2003	2004
AC Emerson	102	82	101	95	97	94	97	89	109	AC Emerson	82	107	106	108	95	101	105	115	116
AC Hanley	99	106	101	92	101	98	94	100	102	AC Hanley	96	94	90	96	90	93	81	109	84
AC Lightning	107	101	101	99	99	105	108	98	92	AC Lightning	94	90	91	81	96	100	92	73	91
AC Linora	99	103	101	90	97	110	111	100	96	AC Linora	122	105	108	109	108	88	110	77	111
AC McDuff	112	103	95	110	99	111	106	127	121	AC McDuff	85	85	93	95	81	93	98	75	96
AC Watson	96	96	97	101	91	95	97	82	99	AC Watson	93	94	92	89	100	109	97	99	92
Bison	102	104	99	99	103	93	111	97	107	Bison	100	107	103	111	112	91	103	92	117
CDC Bethune	91	101	101	87	101	97	102	110	92	CDC Bethune	111	111	104	96	112	92	103	76	111
Dufferin	86	86	101	104	91	97	93	98	85	Dufferin	104	102	110	102	100	102	106	99	108
Flanders	110	106	99	119	99	105	104	90	94	Flanders	107	113	105	121	116	104	108	108	98
J.W.S.	95	106	101	102	103	90	101	116	99	J.W.S.	115	93	94	87	83	109	94	117	91
Linott	110	89	99	102	103	97	90	97	99	Linott	88	85	96	103	94	79	86	86	83
Macbeth	102	103	101	95	95	96	108	100	83	Macbeth	113	98	97	94	80	101	98	92	98
McGregor	96	115	101	96	103	100	85	105	104	McGregor	100	108	100	93	107	107	101	98	103
Norlin	107	93	101	102	97	105	103	107	115	Norlin	89	112	115	118	112	98	108	93	117
Prairie Blue	94	104	101	110	97	107	102	100	107	Prairie Blue	97	104	97	96	103	100	99	112	113
Raja	107	70	101	93	101	95	103	107	100	Raja	117	92	103	104	98	92	96	121	97
Redson	86	92	101	116	97	98	103	114	85	Redson	104	103	108	113	101	108	97	98	97
Redwing	96	99	101	110	101	84	103	107	107	Redwing	101	101	102	110	96	102	99	107	97
Redwood	102	96	101	108	101	112	106	109	109	Redwood	93	108	100	89	103	98	100	114	96
Redwood 65	102	98	101	98	105	98	93	85	92	Redwood 65	82	100	105	112	107	116	106	116	102
Reserve	102	119	99	93	103	104	89	97	102	Reserve	104	97	92	82	98	110	100	92	90
Rio	96	117	101	81	105	110	87	87	100	Rio	81	92	93	95	98	94	103	109	94
Rocket	86	108	101	102	99	100	107	110	100	Rocket	112	101	100	95	102	102	104	85	94
Vimy	110	102	99	93	111	98	99	100	100	Vimy	99	98	97	102	99	109	104	105	97
Field Averages /a	**18.7**	**42.8**	**18.9**	**22.1**	**16.2**	**29.5**	**26.5**	**15.0**	**15.6**	**Field Averages /a**	**12.2%**	**16.6%**	**18.9%**	**17.2%**	**13.1%**	**13.5%**	**17.5%**	**7.4%**	**17.2%**

a/ Field averages are the average of all varieties at that location, expressed in actual units (Salvaged Straw Yield in kg/ha, fiber content in percentage, fiber yield in kg/ha)

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'NIR Fiber % On Unretted Straw' (Column C * Column B)

NOTES:

Salvagable Straw Yield (kg/ha)

Variety	C Indian Head 2003	C Indian Head 2004	C Indian Head 2004	C Kernan 2004	C Indian Head 2004	C Melfort 2003	C Melfort 2004	C Regina 2003	C Indian Head 2004
AC Emerson	74	83	108	93	89	86	93	79	103
AC Hanley	156	104	116	82	124	103	100	111	102
AC Lightning	78	109	67	85	103	103	120	98	77
AC Linora	109	88	110	62	91	128	115	37	85
AC McDuff	102	90	95	100	94	108	104	117	142
AC Watson	105	101	66	111	92	93	85	58	90
Bison	85	119	102	120	110	86	115	157	117
CDC Bethune	88	115	111	89	105	103	95	173	86
Dufferin	119	76	85	101	103	96	109	69	76
Flanders	141	100	90	149	94	105	109	24	83
J.W.S.	99	103	107	98	92	85	116	115	99
Linott	96	86	77	78	127	95	64	98	102
Macbeth	87	112	91	109	90	100	110	127	85
McGregor	105	112	120	90	74	129	76	102	118
Norlin	90	106	90	85	93	105	112	126	150
Prairie Blue	63	118	129	121	88	118	94	108	109
Raja	136	61	71	95	84	83	83	47	77
Redson	87	74	78	121	55	84	117	147	72
Redwing	73	82	110	140	97	89	105	136	120
Redwood	63	81	97	96	129	113	118	105	96
Redwood 65	113	95	101	115	103	86	83	87	86
Reserve	67	143	97	103	110	104	81	124	118
Rio	114	128	129	58	110	100	81	72	93
Rocket	114	113	131	93	123	87	121	129	104
Vimy	98	102	122	104	119	112	96	93	119
Field Averages /a	**418**	**4,124**	**167**	**1,008**	**388**	**1,129**	**1,348**	**307**	**473**

NIR Fiber Yield (kg/ha) (B*C)

Variety	D Indian Head 2003	D Indian Head 2004	D Indian Head 2004	D Kernan 2004	D Indian Head 2004	D Melfort 2003	D Melfort 2004	D Regina 2003	D Indian Head 2004
AC Emerson	60	88	114	97	83	88	96	91	121
AC Hanley	146	97	103	74	113	96	82	126	86
AC Lightning	75	98	61	70	100	103	110	75	69
AC Linora	132	92	120	66	97	114	126	79	99
AC McDuff	86	77	88	93	75	104	101	92	135
AC Watson	97	95	61	98	96	100	82	58	82
Bison	88	128	104	131	124	77	118	151	135
CDC Bethune	98	128	115	85	116	95	97	134	95
Dufferin	124	78	94	102	104	98	115	66	82
Flanders	150	112	95	176	108	109	119	27	79
J.W.S.	112	96	101	91	74	93	109	141	89
Linott	84	73	74	79	116	76	56	87	85
Macbeth	96	108	89	101	72	101	107	121	81
McGregor	105	120	121	83	79	137	77	101	122
Norlin	77	120	104	100	104	103	120	111	175
Prairie Blue	62	123	125	114	90	116	93	129	124
Raja	158	57	72	97	82	77	79	58	73
Redson	90	78	84	137	55	90	115	149	69
Redwing	73	83	112	158	93	91	105	151	116
Redwood	58	87	98	86	135	110	117	102	91
Redwood 65	92	93	106	129	108	101	88	108	89
Reserve	69	139	89	88	109	115	81	119	105
Rio	93	117	121	55	110	94	83	82	86
Rocket	128	114	132	87	127	89	125	110	99
Vimy	99	100	116	105	122	122	99	93	116
Field Averages /a	**51**	**687**	**31**	**177**	**51**	**153**	**238**	**22**	**82**

a/ Field averages are the average of all varieties at that location, expressed in actual units (Salvaged Straw Yield in kg/ha, fiber content in percentage, fiber yield in kg/ha)

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'NIR Fiber % On Unretted Straw' (Column C * Column B)

NOTES:

Salvagable Straw Yield (kg/ha)

Variety	C Indian Head 2003	C Indian Head 2004	C Indian Head 2004	C Kernan 2004	C Indian Head 2004	C Melfort 2003	C Melfort 2004	C Regina 2003	C Indian Head 2004
AC Emerson	74	83	108	93	89	86	93	79	103
AC Hanley	156	104	116	82	124	103	100	111	102
AC Lightning	78	109	67	85	103	103	120	98	77
AC Linora	109	88	110	62	91	128	115	97	85
AC McDuff	102	90	95	100	94	108	104	117	142
AC Watson	105	101	66	111	92	93	85	58	90
Bison	85	119	102	120	110	86	115	157	117
CDC Bethune	88	115	111	89	105	103	95	173	86
Dufferin	119	76	85	101	103	96	109	69	76
Flanders	141	100	90	149	94	105	109	24	83
J.W.S.	99	103	107	98	92	85	116	115	99
Linott	96	86	77	78	127	95	64	98	102
Macbeth	87	112	91	109	90	100	110	127	85
McGregor	105	112	120	90	74	129	76	102	118
Norlin	90	106	90	85	93	105	112	126	150
Prairie Blue	63	118	129	121	88	118	94	108	109
Raja	136	61	71	95	84	83	83	47	77
Redson	87	74	78	121	55	84	117	147	72
Redwing	73	82	110	140	97	89	105	136	120
Redwood	63	81	97	96	129	113	118	105	96
Redwood 65	113	95	101	115	103	86	83	87	86
Reserve	67	143	97	103	110	104	81	124	118
Rio	114	128	129	58	110	100	81	72	93
Rocket	114	113	131	93	123	87	121	129	104
Vimy	98	102	122	104	119	112	96	93	119
Field Averages /a	**418**	**4,124**	**167**	**1,008**	**388**	**1,129**	**1,348**	**307**	**473**

NIR Fiber Yield (kg/ha) (B*C)

Variety	D Indian Head 2003	D Indian Head 2004	D Indian Head 2004	D Kernan 2004	D Indian Head 2004	D Melfort 2003	D Melfort 2004	D Regina 2003	D Indian Head 2004
AC Emerson	60	88	114	97	83	88	96	91	121
AC Hanley	146	97	103	74	113	96	82	126	86
AC Lightning	75	98	61	70	100	103	110	75	69
AC Linora	132	92	120	66	97	114	126	79	99
AC McDuff	86	77	88	93	75	104	101	92	135
AC Watson	97	95	61	98	96	100	82	58	82
Bison	88	128	104	131	124	77	118	151	135
CDC Bethune	98	128	115	85	116	95	97	134	95
Dufferin	124	78	94	102	104	98	115	66	82
Flanders	150	112	95	176	108	109	119	27	79
J.W.S.	112	96	101	91	74	93	109	141	89
Linott	84	73	74	79	116	76	56	87	85
Macbeth	96	108	89	101	72	101	107	121	81
McGregor	105	120	121	83	79	137	77	101	122
Norlin	77	120	104	100	104	103	120	111	175
Prairie Blue	62	123	125	114	90	116	93	129	124
Raja	158	57	72	97	82	77	79	58	73
Redson	90	78	84	137	55	90	115	149	69
Redwing	73	83	112	158	93	91	105	151	116
Redwood	58	87	98	86	135	110	117	102	91
Redwood 65	92	93	106	129	108	101	88	108	89
Reserve	69	139	89	88	109	115	81	119	105
Rio	93	117	121	55	110	94	83	82	86
Rocket	128	114	132	87	127	89	125	110	99
Vimy	99	100	116	105	122	122	99	93	116
Field Averages /a	**51**	**687**	**31**	**177**	**51**	**153**	**238**	**22**	**82**

a/ Field averages are the average of all varieties at that location, expressed in actual units (Salvaged Straw Yield in kg/ha, fiber content in percentage, fiber yield in kg/ha)

NOTES:

Cut Straw Ht (cm) is measured by cutting the straw at the level the seed boll heads and holders start

NIR Fiber % On Unretted Straw is the amount of fiber, expressed as a percentage, within the NIR scanned sample

Salvageable Straw Yield (kg/ha) is the '1m2 Salvaged Straw Wt (g)' times 10,000 m2 per hectare divided by 1,000 grams per kilogram

Fiber Yield Based On Salvaged Straw (kg/ha) is the 'Salvaged Straw Yield (kg/ha)' times the 'NIR Fiber % On Unretted Straw' (Column C * Column B)

NOTES:

Regression Results

Regression Equations are presented in Appendix D.

Cut straw lengths in 2003, 2004 and 2005 were significantly less than Indian Head at Melfort (-0.3 cm), Kernen (-9.2 cm), and Regina (-13.0 cm) with an adjusted r^2 of 0.35 (Equation D-1).

Fiber contents in 2003, 2004 and 2005 were significantly lower than Indian Head at Melfort (-1.1%), Kernen (-1.4%), and Regina (-4.0%) with an adjusted r^2 of 0.14 (Equation D-2).

Salvageable Straw Yields in 2003, 2004 and 2005 were significantly lower than Indian Head at Melfort (-550 kg/ha), Kernen (-1,089 kg/ha), and Regina (-1,393 kg/ha) with an adjusted r^2 of 0.17 (Equation D-3).

Fiber Yields in 2003, 2004 and 2005 were significantly lower than Indian Head at Melfort (-100 kg/ha), Kernen (-181 kg/ha) and Regina (-241 kg/ha) with an adjusted r^2 of 0.17 (Equation D-4).

Cut Straw Lengths were significantly higher than 2005 in 2004 (+13.6 cm), and 2003 (+5.1 cm) with an adjusted r^2 of 0.38 (Equation D-5).

Fiber Contents were significantly higher than 2005 in 2004 (+0.7%) and lower in 2003 (-5.3%) with an adjusted r^2 of 0.47 (Equation D-6).

Salvageable Straw Yields were significantly higher than 2005 in 2004 (+1,820 kg/ha), and 2003 (+345 kg/ha) with an adjusted r^2 of 0.39 (Equation D-7).

Fiber Yields were significantly higher than 2005 in 2004 (+313 kg/ha) with an adjusted r^2 of 0.41 (Equation D-8).

Cut Straw lengths were significantly lower than Soil Zone 3 in Soil Zone 2 (-10.8 cm) with an adjusted r^2 of 0.33 (Equation D-9).

Fiber Contents were significantly lower than Soil Zone 3 in Soil Zone 2 (-2.1%) with an adjusted r^2 of 0.08 (Equation D-10).

Salvageable Straw yields were significantly lower than Soil Zone 3 in Soil Zone 2 (-988 kg/ha) with an adjusted r^2 of 0.14 (Equation D-11).

Fiber yields were significantly lower than Soil Zone 3 in Soil Zone 2 (-165 kg/ha) with an adjusted r^2 of 0.13 (Equation D-12).

Fiber yields are significantly responsive to Fiber contents, with an adjusted r^2 of 0.08 (Equation D-13)

Fiber Yield (kg/ha) = (89.07) + 1,753.32(Fiber Content (%))

Conclusions and Impact

Conclusions

The 2003 and 2004 growing conditions were quite extreme. The 2004 growing season was cold and wet, and experienced an early frost and an extremely late fall season. The 2003 growing season was extremely hot and dry.

It is uncertain how much bias and misleading information was generated from the weather extremes. More years of testing are required to improve the quality of the variety and location data set.

It is apparent that location influences fiber contents, straw yields, and fiber yields. It is also apparent that varieties perform differently at different locations. (i.e., one variety may have the highest fiber yield at one location and at another location the same variety may have one of the lower fiber yields)

There was a wide range of fiber contents in the straw tested in 2004. Given such a wide range of fiber contents, it is very important for processors and producers of flax straw and breeders of flax varieties to know that there is a method that will allow them to quickly choose straw that has superior fiber content.

Both the NIR and manual methods of bast fiber determination used in this project are suitable, in most cases, to distinguish straw with high, medium or low bast fiber contents.

Impact

The reader should keep in mind that fiber yield is related to both fiber content of the plants and the total yield of straw. High fiber content in a year where low biomass is produced may not produce enough fiber per acre to make collection profitable for processors.

It is very important for processors of flax straw to be able to choose only straw that is profitable to process (i.e., have high enough fiber content and yield). The results of the tests carried out in this project indicate that variety and location of production often influence fiber content. Farmers, thus, can influence fiber content by their choice of variety, based on location. Biolin's manual and NIR methods of testing flax samples for fiber content provide a basic, essential testing and assessment tool for producers, processors and potential investors who seek to develop a fiber industry in Saskatchewan. Continuing testing for fiber content of oilseed flax varieties grown in various locations in the province and continuing research work to identify and assess the factors that contribute to fiber content should be a priority if the private sector and governments wish to increase the number and size of firms engaged in value adding activities based on flax straw and flax fiber.

Assuming weather plays a large role in determining fiber content and, hence, that a particular location that produces high fiber content straw in one year will not necessarily produce high fiber content straw the next year, processors will likely find it necessary to collect straw from widely separated and different locations in different years and/or to store high fiber content straw over several seasons to meet their needs.

Appendix A

The following is the raw data from the 2003, 2004 and 2005 Saskatchewan Regional variety Trials.

This appendix has been excluded due to size; it is available upon request.

Appendix B

The following pages show the results that were obtained from the 2003, 2004 and 2005 Saskatchewan SAC Flax Trials when regressions were run using the regression function packaged with the Excel Spreadsheet Program. For reference purposes, each equation was given a separate number and a short description of what the dependent variable in the equation was. In the result sections, lines that are in bold text indicate that the result is significantly different at the 95% confidence level. It should be noted that the regression function that is packaged with the Excel Spreadsheet Program is limited to 16 explanatory variables. This means that, in some cases, all possible explanatory variables could not be included. In these cases, we tried different combinations of 16 variables, to find the set that appeared to have the best explanatory powers.

This appendix has been excluded due to size; it is available upon request.

Appendix C

The following is the raw data from the 2003, 2004 and 2005 Saskatchewan Genetic Progress Trials.

This appendix has been excluded due to size; it is available upon request.

Appendix D

The following pages show the results from the 2003, 2004 and 2005 Saskatchewan Genetic Progress Flax Trials that were obtained when regressions were run using the regression function packaged with the Excel Spreadsheet Program. For reference purposes, each equation was given a separate number and a short description of what the dependent variable in the equation was. In the result sections, lines that are in bold text indicate that the result is significantly different at the 95% confidence level. It should be noted that the regression function that is packaged with the Excel Spreadsheet Program is limited to 16 explanatory variables. This means that, in some cases, all possible explanatory variables could not be included. In these cases, we tried different combinations of 16 variables, to find the set that appeared to have the best explanatory power.

This appendix has been excluded due to size; it is available upon request.